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The Geographical Journal

Vol. LXIX No. 5 May 1927

THE DIDINGA MOUNTAINS

J. H. Driberg

Read at the Meeting of the Society, 7 February 1927.

IF I have any claim to a scientific designation, I am an anthropologist, and not a geographer. On the score of geographical science, and still less of geology, I have no sort of qualification to speak. None the less, my official duties and anthropological recreations have led me to remote areas which were previously unknown and which may therefore claim the interest of novelty, and the slight amateur knowledge which I have of elementary surveying has enabled me to supplement my observations with more concrete material.

I should like to lay stress on the fact that I am here dealing with an entirely new country which has not previously been described, and I submit that it is a surprising country to find in the locality. In conditions which should be tropical, for the altitude of the range does not suggest the likelihood of anything approaching temperate conditions, we find a flora which is essentially sub-tropical and even at times temperate. The butterflies of the region perhaps afford a clue, as we find here that the lepidoptera are predominantly of the Abyssinian type as contrasted with the West African type associated with the forests of Uganda. This suggests that the flora found here is an extension of the flora of the Abyssinian highlands, preserved by conditions of climate and altitude long after the intervening area has dried up and become a plain, almost treeless and entirely tropical.

The area with which I deal has no generic name and is known vaguely both to Europeans and to other neighbouring tribes as the Didinga mountains. The Didinga themselves are known by a variety of nicknames to their neighbours, nicknames such as Lango, Toi, and Karoko, and on old maps you find areas thus labelled " Dodinga or Harogo," or some such analogous name. However, they call themselves Didinga and should so be spoken of by us. But, like most African tribes, they have no generic name for a complex of geographical features: their view-point is completely local and analytical, largely owing to the fact

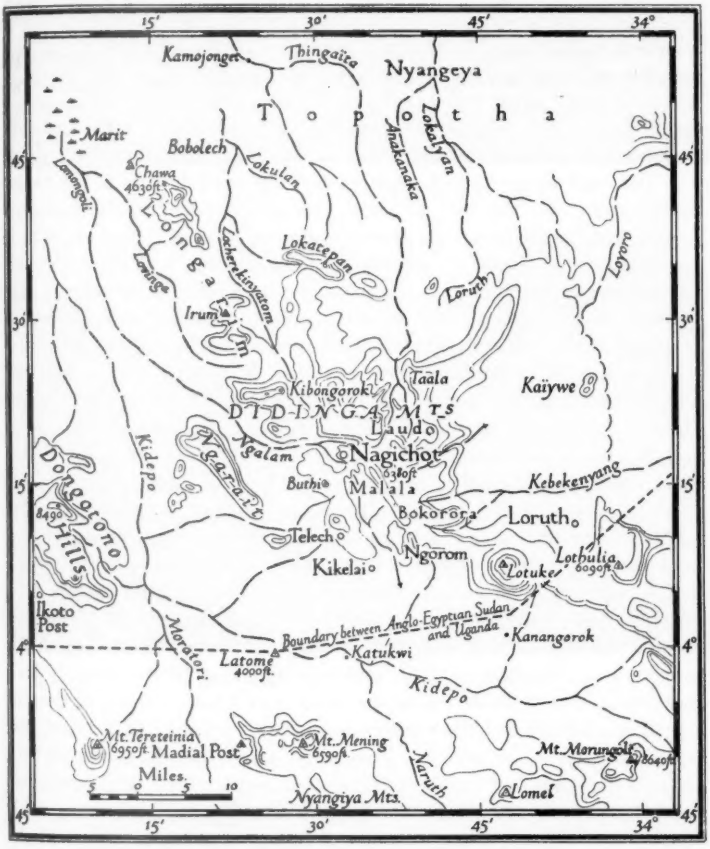
that under normal conditions no one travels beyond his habitual environment, and is thus unacquainted even with adjacent geographical conditions. Even a small range of mountains is not named, though all its most insignificant peaks, valleys, plateaux, or depressions have an individual nomenclature. Just in the same way no river has one name, but every little reach or every pool which remains permanent when the main river is dry has its own name. Thus the Thingaïta has a vast and disconcerting multiplicity of names, of which the Thingaïta is possibly the best known, being called at various points within a few miles of each other Gilogit, Nathilani, Kovir, Mamtikaburi, Lodiga, and so on.

The nomenclature of the Didinga mountains is further complicated by the fact that formerly all the eastern side of the range was inhabited by the Topotha, who now occupy the plains to the north-east of the mountains. Feuds, cattle plague, and the spread of morsitans led the Topotha to migrate to the plains, not in bulk but in isolated though consistent movements which started many years ago and continued to within the last seven years. One result is that on the east side of the mountains most of the geographical names have been duplicated, and the Didinga now use both their own and Topotha names indiscriminately. Thus we have Taala and Morungoli, the Didinga and Topotha names for the same hill, both meaning "the dappled rocks." Nawiakitela is a Topotha name meaning a broad open space, and is so called by the Didinga. A river rising on Lotuke is called alternatively Kamothing—the Topotha for "the place of the rhinoceros," which abound in that vicinity—or Mamtiknge telak, which is the Didinga version with the same meaning. Nawuruwich, "the place of fat cattle," curiously blends Topotha and Didinga in one word, *uro* being a Didinga word meaning "dust spirals," from dust raised by the cattle's feet, and *owich* being Topotha for a cattle kraal.

Every geographical name has a meaning, and it is the meaning which often enables one to transcribe with accuracy a name which may be loosely or carelessly pronounced or which is with difficulty heard. The selection of a particular geographical name may be influenced by a variety of motives. The name may only contain a geographical description, as do Tola, "The Pass," or Bokorora, "A ridge running out and dividing two adjacent territories": it may refer to some botanical or geological feature or to the distribution of fauna, as Ngorom, "travertine"; Kimodo, "the place of red earth"; Nakólip, "the place of black earth"; Kikelai, "the land of wild olives"; Nakorechoke, "where the giraffe are driven up hill": or again, climatic conditions may determine the name, as for example, Loduru, "the ridge of fog"; Lowákuch, "where it always rains" (derived from the Topotha *Nyakuch*, "rain"): or the name may enshrine or commemorate some clan history or personal experience, for example, Lotuke, which is a clan name; Rubwor, a large

forest named after a dead leader; Karimi, "the place where a man ran away distracted after a great loss"; Chebjya, "where a calf was tied to a tree."

The general aspect of the Didinga mountains is fairly straightforward. Extending from Irum in the north to Lothulia in the south, they form



Sketch-map of the Didinga mountains

one continuous geographical feature, narrowing in places, as for instance above the limestone caves of Ngorom near the west of Lotuke, to an elevated neck, at times no wider than 20 yards, from which extend at irregular intervals alæ of varying lengths: farther north the central plateau broadens and the alæ lose their independent character, and are involved in the general complex which forms the Didinga range. Hard

angularities give place to rolling downs, crag and scarp, shale slope and barren rock to rounded crystalline contours, fertile meadows and deep pastures. The east continues to exhibit features similar to the south, intensified in abruptness, steeper and more rugged; while the north-east is a series of sheer precipices and deep gorges, the traversing of which involves considerable exhaustion and is sufficiently precarious in foggy weather to make even the native mountaineers cautious in their generally reckless movements. Only on the central plateau do we find a paradise of subtropical climate and vegetation, from which at a general altitude of 6000 feet we can survey the barren Topotha plains in the distant east and look westward across the scarcely less arid Kidepo valley towards the Nyangiya mountains some 35 miles away.

The contrast between the eastern and the western sides of the range is immense. On the east, as I say, precipitous cliffs and sheer escarpments drop suddenly to the general 2000-feet level of the plains, which are broken and irregular: on the west the descent is gradual and the main mass of the mountains is approached by a series of foothills. The west is better watered and carries a greater quantity and variety of vegetation; the east is arid and clearly shows the effects of contact with general eastern conditions: the vegetation is stunted and almost exclusively tropical of the type usually associated with savannah country. The crest of Lotuke and all the higher plateaux are heavily forested, as are the majority of the gorges, differing only in the nature of the vegetation, which on the highlands is of a temperate and semi-temperate variety, such as cypress, Wellingtonia, and beeches, whereas in the gorges palm trees predominate and enormous timber trees, particularly mahogany and cordia. A large variety of edible fruits abounds, notably a species of cherry, an edible viringia, blaeberries and loganberry canes. The distribution of bamboo is worthy of notice, being found in the vicinity of Lotuke, at Kibongorok and Ngalam and on the north-east side of the mountains; elsewhere, though conditions appear to be the same, it does not exist. Shortly after the spring rains start a large variety of flowers burst into bloom, and the country is blue with a carpet of gentian, the forests become heavy with the scent of cyclamen, and the rhododendron colours the landscape with a profusion of blossom: then, while the grass is still short and the days are cold and, as often happens, heavy with mist, and the bracken is green and dripping with moisture, one might easily forget that one was in tropical Africa and be transported in imagination to the enchanting hills above Edinburgh.

Geologically the area is of considerable interest, recalling as it does the inverted strata of the Jura region. It has clearly been subjected to a succession of great upheavals, and to this day the line from Taala to Ngorom and thence to the south end of the Nyangiya range is affected by earth-tremors of varying intensity. During the month of the Japanese earthquake in 1923 over thirty shocks were noted, but none outside of

Mount Lotuke from Bokorora

Kawara rocks on Taala plateau

North-west foothills of Didinga and Buthi peak

Crystalline limestone of Taala

Reach of the Lovinga

this line. On one occasion, while I was climbing Taala during this period, a violent tremor, which lasted for close on two minutes and was succeeded by a number of lesser tremors, was preceded by a terrific rumbling and a roaring so ominous that I was myself apprehensive, and the natives who were with me were prostrated with panic and unable even to run away. During the main tremor large masses of rock were detached and precipitated to the plains, and the ground swayed and reeled in a most disconcerting manner. I may mention that the ascent at this point was steep and difficult, and the crashing of *débris*, the noise, and the apparent instability of the mountain created an impression which was the reverse of pleasant.

That this region is one which has always been subject to earth-tremors is established by two Didinga legends, but I should add that the arrival of the Didinga at their present habitat is comparatively recent, and these legends must enshrine a tradition handed on to them by previous occupants of this territory.

The first refers to Taala, a rocky eminence of crystalline limestone at the east end of the south arm of the Laudo valley. It rises abruptly from the plain to a height of 5615 feet, and the crest of it resembles a battlemented terrace—rocky turrets embracing a small plateau of fertile land. Two limestone caves revealed no trace of any earlier culture, and water is obtainable from a spring near the summit and from other springs lower down should, as rarely happens, the topmost spring dry up. In the dry season however the water is not sufficient for all requirements, and livestock has daily to be driven down to the hot springs of Mamtikaburi, which bubble continuously in the bed of the Thingaïta river at the base of Taala. The water of these hot springs is highly impregnated with sulphuretted hydrogen, and contain so large a proportion of solids that it is not really fit for human consumption except for limited periods. I should add that the limestone at the top of Taala is of the crystalline variety, but at the base it has become metamorphosed into a marble. An interesting point is that by crushing the limestone crystals obtained at the crest strong fumes of sulphuretted hydrogen are released, though the water now obtained from the topmost spring, Ngamunyunyi, contains no trace of this gas.

The story runs in this way: "Once upon a time Tadoi quarrelled with Nakapel" (two turret peaks on the crest of Taala), "for Nakapel asserted that he was better dressed than Tadoi. 'Observe,' he said, 'my beautiful green grass and how fine my limestone is, all white and shining in the sun, so polished and resplendent that all the girls fall in love with me and my heart rejoices; for it is good to feel the green grass about one and to catch the eye of the sun and to know love. But I am sorry for you, Tadoi, who are only black rock.' At this time both Tadoi and Nakapel lived at Taala, and they quarrelled as to who was the greater, but Nakapel thought that beauty was the more important thing and did

not care to be great or important. Tadoi however would not leave him alone, as Tadoi was jealous and said that beauty was nothing, and that Nakapel was growing old and his limestone was crumbling away from him, whereas Tadoi would never grow old, and, though his rock might be black and uncomely, yet it endured and would continue to endure long after Nakapel ceased to interest the girls. And so they quarrelled perpetually until in the end Nakapel said, 'If you persist in saying that you are more important, I shall go away to a new place.' He used to live on the south of Kawara" (another of the turret peaks of Taala), "but in his anger he plucked himself up and he went. There was much dust and smoke and an unceasing rumbling for three days when Nakapel went, and he went north to where he now is at the Loruth river" (9 miles away). "He went and dropped little hills by him, which are the little hills which we see to-day near Loruth, and the river Loruth sprang up, for there was no river before, and that is why its water is always warm and brackish. Nakapel went with all his cattle and goats: he still has them all, but we cannot see them as he has hidden them away somewhere. We know that this is true, as there were people here in those days, some way farther back down the valley, but they were too far from Taala for any to be hurt."

I may remark here that any river or spring in this part of Africa which is called Loruth or Naruth, or a similar name—and there are many of them—may be accepted as brackish without sensory evidence. This connotation of the word is common to many tribes such as the Topotha or Turkana in addition to the Didinga, and is a useful indication of what a traveller may expect to find at the end of a hot and thirst-provoking march.

The second legend refers to a hot spring, Kanangorok, on the Dodoth track to the south-west of Lotuke. There is ample water here at all seasons of the year, and during the dry weather both livestock and game drink from it freely. Though the pond is only just above normal heat, the spring is itself almost unbearably hot at its point of issue.

"A Lotuke man"—thus runs the story—"went to waylay Dodoth, and on his way across the plain found a small pot resting against the branch of a fig tree which was beside the track. There was some rain-water inside the pot, and the lightning spirit had entered in with the rain and had adopted the pot as his home. The spirit was away at the time, but discovered that this man had taken the pot, for after returning from his walk the spirit found that the pot had vanished and followed on the tracks of the man who had taken it. The whole sky immediately clouded over, and a terrific storm gathered. Now the man who had taken the pot thought that it was only an empty pot, and if he had known that it was the home of the lightning spirit he would not have taken it. So when the man saw the storm coming up behind him, he ran homewards without thinking much of it. He ran and he ran, but the faster he ran

the more the storm concentrated on his tracks. The rest of the sky was clear and sunny, but the menacing clouds gathered behind him, whirling great columns of dust, and came gyrating in great spirals after him. Then he knew fear, for he could see that the storm was shaped for him alone, and he thought that this must be God, and he threw the pot away at the place which we call Kanangorok. The storm stopped where he threw the pot, and it rained there for four days without ceasing. But the pot broke when he threw it and the water in it was spilled. So the spirit came to live there, and it became the boiling spring of Kanangorok, where formerly there had never been any water."

These two stories, I think, may reasonably be taken as a tradition of at least seismic activity in the past, and the former may even contain a tradition of now long-forgotten volcanic action. But before passing from the subject of springs I must first refer briefly to two springs, Longorina near Nagichot and Benyangoli near Malala. My attention was first drawn to Longorina by sounds of what appeared to be rifle-shots, but on investigation I learned that no shots had been fired, and I discovered by inquiries from the local Didinga that the sounds emanated from Longorina, a spring hidden in a dense thicket of the forest fringing the source of the river Ngamyela. This spring is greatly feared, partly owing to these sounds and partly owing to a belief that supernatural lights play about it, and no Didinga will go near it except in the dry season, when the water and the surrounding marsh disappear.

Longorina is greatly feared and respected, but the fear which it inspires is nothing to the horror which even the name of Benyangoli evokes. I heard of its existence by a mere accident, and it was only two years later that any one could be induced to show me even where it was situated. When I asked for information about Benyangoli, I would generally be told quite courteously and with an expression of disingenuous candour that there was no such place, or that it was a creation of my own imagination. Further questioning would plunge my listener into an abject terror, and it was only gradually that I was able to learn the mythical attributes with which its history had been embroidered. Benyangoli—I was told—is a spring at the bottom of a deep gully: it is cursed, and no living thing goes near it. Once a herd of buffalo approached the spring and died incontinently, and ever since then all animals have avoided it, so that there is never seen the track of any animal in its vicinity, while cattle by instinct keep at a safe distance from it, and no human being will approach anywhere near it. Birds even do not fly over it, and if any fly too low they suddenly drop dead and disappear. Lights constantly flicker over the spring, and it emits loud detonations from time to time, and there is always a roaring gale of wind blowing from it, so powerful that at times it will even drive cattle before it. Such are the legends which have grown round Benyangoli, and which have terrified successive generations of Didinga. It was difficult and, as I

say, a matter of two years to find any one willing to guide me, as they firmly believed that I would die if I were to visit the spring, and they were courteous enough not to wish my death; but eventually I was able to persuade a few men to do so on the understanding that it was my own responsibility and on condition that I should first undergo every kind of magical prophylactic. The approach was curious and hesitating, as my guides wished to stop and turn back every few yards, and to return to the group which was anxiously watching our progress from a safe distance. We reached the deep gorge in safety, and then had to negotiate a belt of nettles shoulder high and entered the forest. Beyond this point my guides would not go, but by signs and whispered directions indicated the route which I should take, as the spring was now close at hand. The side of the gorge was very steep, and the going much impeded by roots, lianæ, and a tangle of undergrowth. But in any case I advanced with possibly unnecessary caution, as I was not sure what to expect, though marsh gas offered an easy explanation—and I may say now that it is probably the correct explanation of the phenomena connected with these two springs, though a sample of water which I took from Benyangoli for analysis unfortunately never reached its destination intact. However, I shortly arrived within sight of the spring and was relieved to see that it was not so lethal as tradition asserted, as butterflies were hovering over it and some geese were contentedly swimming in it. Thus reassured, I tripped over a root and rapidly ended my journey to find myself sitting before the most beautiful pool imaginable, surrounded by maidenhair fern and backed by a wall of pegmatite, marvellously smooth and exquisitely tinted, over which a cascade of clear water fell into the muddy catchment of the pool. The darkness of the surrounding forest only threw into greater relief the small patch of sunlight which filtered through a break in the treetops on to the mysterious Benyangoli. The place was too beautiful for a rational explanation, and I am sure that, though they saw me return unharmed, the Didinga will not abandon their old fears and Benyangoli will not yet be desecrated by the trampling of cattle and the ruinous voracity of goats. Sporadic explosions of marsh gas will still continue to maintain the truth of the old legends, and the incident will only be remembered as an instance of incredible good fortune and as an example of the efficacy of protective magic.

On the mountains the average rainfall is approximately 48 inches a year, with a dry period in December and January and a lesser break in July, May and June providing the heaviest fall. What happens to all the water which the mountains collect is a question which will naturally occur. In what direction does it drain and what use, if any, is made of it? The answer to this question should be easy, but I fear that I am somewhat hampered by lack of personal experience of the country farther north, say between the 7th and 8th degrees of north latitude. All the rivers in this vicinity are seasonal as soon as they leave the hills. In the

mountains themselves there is an abundance of perennial springs and streams, and the larger gorges contain flowing water near the source at all seasons of the year, but this water frequently disappears into the sand and gravel, reappearing, it may be, a few hundred yards lower down until it finally disappears for good. During the rains most of these gorges are quite impassable for days at a time, and a vast volume of water is carried to the plains. On one occasion I recollect that I took four very moist and unpleasant days on a journey which would normally be completed in one long march. On another occasion when, towards the end of the rains, I camped by a river-bed near the entrance to the Thuguro valley, I found it interesting to observe the action of the stream which was running down quite strongly, as I camped at the point of its then disappearance into the sand. From midday to six o'clock in the evening the stream had receded between 40 and 50 yards, but in the cool night air it had by the next morning recovered more than half its loss.

If we return to our map we see first on the east the valley of the Kidepo, called by the Didinga Lokido, or " The River," meaning that it is the most important river for them. Its importance lies in the fact not only of its danger during the flood season and the difficulty of negotiating it when in full flow, but also in the fact that the Didinga are semi-nomadic, and all the western half of the tribe depends on the permanent pools of the Kidepo, such pools as are formed by the gneiss barrier at Katukwi, for their dry season's quarters. They migrate in mass with all their livestock and settle for two or three months on its banks in order to obtain fresh pasturage for their cattle, to be within striking distance of game, and to enjoy the fruit of the borassus palm which abundantly fringes the Kidepo wherever water is permanent.

It is very obvious even without personal experience that the Kidepo, rising near Morungoli behind the Didinga range, must carry down annually a tremendous volume of water, not only from its Didinga tributaries, but also from the Nyangiya mountains through the Naruth valley and from the Acholi country by the agency of its most valuable feeder, the Moratori. The Kidepo, after bending round the Dongotono hills, pursues a steadily northward course, gathering to itself all the water which comes down from the west side of the Didinga mountains, until its bed gradually widens, loses definition, and finally disappears north of the Longarim hills. These hills are not drained by the Kidepo, but by a smaller, though still quite considerable river when in flood, which we shall call the Lovinga from its best-known reach, its main sources being the Morukwa and the Iwochi on the south, while north of Lomongoli it receives a further addition in the Kothowan, which rises in a delightful re-entrant of Chawa, the most northerly point of the Longarim hills. This Chawa has been the site of innumerable battles between the Longarim and the Topotha, and I have never seen graves so closely clustered together in Africa as at this place, nor funeral cairns so elaborate

and lofty as some that are visible on all sides at Lokanangorok. The source of the Kothowan itself affords an abundant supply of water at all seasons of the year, even when other supplies fail; but once again at no great distance north of Lomongoli the Lovinga disappears into the prevailing cotton soil, and the waters lose themselves in a marsh during the rains.

Of a similar nature to these rivers is the Locherekinyatom, which rises on the north of the Didinga mountains and runs close along the east side of the Longarim hills, and shortly after being joined from the east by the Lokulan and its affluences loses itself in the sandy region north of Bobolech. All these rivers are impassable when rain is falling heavily in the mountains, and throughout the rainy season they carry a constant flow of water, but during the dry season, though they are generally dry, water can be obtained by digging to no great depth at fairly frequent intervals; and at many places rocky barriers form permanent pools, sometimes so large as to carry an abundance of fish, albeit of a muddy nature which only the general absence of fish enables one to eat with satisfaction. This is one point about the mountain streams which is difficult to understand, and that is the total absence of fish in all the rivers except the Komoju on Mount Lotuke. It is not that the water is insufficient, nor that the temperature is too cold, as the lowest night temperature which I recorded was 41° F. at an altitude of 4870 feet, and I am unable to account for the phenomenon except on the hypothesis that the annual floods have carried all the fish down the waterfalls on to the dry plains, where they have only survived in a few pools, as at Mamtikaburi, and whence they have been unable to return. It is not however for this cause, but for a more esoteric reason, that the Didinga refuse to eat fish, which are in some way associated by them with their high god, and are called in addition to their ordinary name "the lightning of the river" and "the spirit of the river." Indeed, all rivers and watercourses are to a certain extent feared for the same cause, and Didinga will not normally spend a night in close proximity to a river—even if the bed is dry and it is not the season for floods—for fear of some evil or sickness befalling them by too close a contact with the supernatural. The prohibition against fish therefore seems to be due to their association with rather than their absence from rivers.

To the north-east of the Didinga mountains lie the barren Topotha plains, arid, hot, and quite unattractive. Save along the river-banks the country almost entirely consists of black cotton soil, which during the rains clings to one's feet and makes walking a matter of infinite toil, and during the dry season entirely fails to retain any moisture and opens out into gaping cracks often large enough to trip one up. Grass is scanty and of such poor quality that the Topotha rely more on palm fronds for thatching their huts, and the prevailing vegetation consists of stunted thorn trees which grow in thickets and belts so impenetrable that a long

détour is not uncommonly necessary to avoid them. Browning gives a better description of this desolate country than any which I could put before you :

"I think I never saw
Such starved ignoble nature; nothing throve;
For flowers—as well expect a cedar grove!
But cockle, spurge, according to their law
Might propagate their kind, with none to awe,
You'd think: a burr had been a treasure trove.

* * * * *

"If there pushed any rugged thistle-stalk
Above its mates, the head was chopped—the bents
Were jealous else. What made those holes and rents
In the dock's harsh swarth leaves—bruised as to baulk
All hope of greenness? 'tis a brute must walk
Pushing their life out, with a brute's intents."

This country is traversed by two main rivers which run north parallel to each other, the Thingaïta and the Lokalyan, the former rising in the mountains overlooking the Laudo valley and the latter rather farther south. Almost connecting the two is a small tributary of the latter, the Anakanaka, and we find the whole population of the extensive Topotha tribe settled along the banks of these three rivers in a series of villages which sometimes, as between Karengak and Mothingo on the Thingaïta, extend for several miles without a break. Here they live during the rains, depending for food largely on their extensive herds and but little on the white millet which their women cultivate in small quantities, as during the rains, at any rate from April to August, the mountain floods bring down such an abundance of water that even when the floods have passed the sand is so saturated that a slight scratching on the surface suffices to produce enough water. As the dry season approaches however these river-beds, in which the sand is so deep that any reefs or bars are too overlaid to act as reservoirs, cannot maintain the population, and all except the old men and some women and children, with a modicum of warriors for protection, migrate with their livestock and chattels to a variety of permanent pools in the Didinga foothills, as at Loruth, Kataninyang, and Lopurwi, or in the Longarim country, such as Marit and Kothowan, or even as far as the Kidepo; for one has to recollect that often permanent water which during the rains is useless for watering livestock owing to the prevalence of tsetse fly, during the dry season is free of that pest. The earlier surface scratchings in the drying river-beds have now become deep wells, and by the end of the dry season these wells are often 40 feet deep, with steps cut in their side and branches inserted as supports in order to enable relays of women to pass the water out. The few cattle which have been left to support the residue of the tribe are strictly rationed with a daily water allowance, cleanliness is not encouraged, and appalling skin diseases, such as one never finds among the mountaineers, affect the whole population, while the conditions are

so favourable to the guinea worm that filaria medinensis has become one of the commonest complaints. The banks of all these rivers are lined with borassus palm, the fruit of which is much prized; but the Topotha population is so great and the demand so far exceeds the supply that the fruit is collected at night and privily hidden in secret caches to foil would-be thieves. It is one of the most delightful sights imaginable on a moonless night to watch hundreds of torches flickering up and down the river-banks as the women and children hunt sedulously for the fallen fruit, all singing and in good humour, but all distrustful of each other and determined if possible to get the better of each other by trickery or even, if necessary, by blows.

The Thingaïta river loses its definition at Kamojonget, spreading out into a marsh of cotton soil in which grows a small forest of acacia trees, but I have no personal experience of the Lokalyan north of Lakorechoke, though I am informed that this river also disperses itself before reaching Kathiangor. North of Kathiangor, in the country lying between the Beir and the Boma plateau, the whole country becomes a marsh during the rains, and rather farther north remains a marsh throughout the year. It is not unreasonable to assume that the tremendous volume of water which is every year precipitated from these southern hills reaches this marsh subterraneously, as the cotton soil is too absorbent to carry the water along the surface, and thus finally, after many vicissitudes, reaches the Nile.

An exception must be made in the more south-easterly area, including the Bokorora valley and the whole region between the Didinga range and Mogila. Though one would expect the drainage in this area to follow the same northerly course, for there appears to be nothing to prevent it, the general lie of the land has here acquired a more definite tilt eastward, and the Kebekenyang with other minor rivers suddenly swings round east and passing the north point of Mogila continues eastwards towards Lake Rudolf.

This region well illustrates the general desiccation which is creeping over Africa, and the traveller requires to know his country and to exercise caution, as water is extremely scarce and any disappointment might entail grave difficulties. Old village sites and tribal traditions clearly indicate that at one time Mogila was thickly inhabited. Now there is nothing but secondary vegetation, very sparse, thorny, and stunted. Grass is scarce, and large tracts of sand and gravel indicate the spread of desert conditions which must inevitably extend still farther westward unless steps are shortly taken to reafforest the area. In this context I may perhaps be permitted to refer to a historical tradition of the Lango tribe, who used to live in this region in the sixteenth century and to the best of my knowledge have had no recent experience of the country. When I was among them about ten years ago, they described among other geographical details of their former habitat a hill which they called

Lomongoli re-entrant from western plains and Lotyathe peak on right

Kibongorok from the north-east

Permanent pool Iwochi on seasonal river Lovinga

Forest cleared for cultivation at source of the Mulen

Thorn scrub on Topotha plains

Longarim foothills

Morukau. Apart from the verbal similarity—*Moru* not being an essential part of the word, but meaning "hill"—their description of the geographical features was so accurate that I was able to identify the hill definitely as Kaïywe, a limestone range of hills which lies to the east of the Didinga mountains. Their description, in fact, was so accurate that I was able without much difficulty to find the only possible route by which one could pass from the west to the east side of the hill, or rather range of hills, a route which it would otherwise have taken some days to discover owing to the complicated nature of the terrain. This, to my mind, is a most interesting piece of evidence of the value of old historical traditions the literal accuracy of which is often needlessly impugned, and if we add that among the reasons why the Lango migrated from this area were famine and the gradual failure of their old sources of water supply, we can see that the process of desiccation, accompanying the gradual elimination of what must have been a once heavily forested country, has been going on for centuries and is still going on, thanks largely to the destruction of timber for which Africans and Europeans are alike responsible. When the Lango migrated there were still several permanent pools at Kaïywe; now there is abundant water during the rains, but during the dry season often there is no water at all, and only one pool can occasionally be relied on to provide water for a small party for a few days.

So far we have not spoken of the Didinga who inhabit this area, and it is impossible within a limited compass to do more than indicate very cursorily what an interesting people they are; nor do I wish to incur the rebuke that native tribes are not geography, though often they are culturally dependent upon geographical environment. And yet this environment acts in singular ways which are frequently unaccountable except on the ground of cultural conservatism. At Lotyathe, for instance, there are extensive deposits of iron ore, which are worked by the neighbouring Napore, who with the Lokathan provide the bulk of the metal implements used by the Didinga, while the Didinga, in whose country this excellent ore is to be found, know nothing about metallurgy, and with the exception of one old man, Ngolikoü of Dokoich, show no interest in what would be a valuable trade, and no disposition to learn it. The earlier inhabitants of the hills, possibly some member of the Lotuko-speaking group, were very obviously workers of metal, as they have left several indications, notably at Kikelai and Telech, that they used to smelt the ore and put it to a useful purpose. Yet despite the ocular evidence of slag heaps, and despite the skill of some of their neighbours, the Didinga continue to regard metallurgy as one of the banausic arts and definitely refuse to avail themselves of the opportunities which their environment affords.

They are a pastoral people, owning extensive herds of cattle and

goats, herds which once upon a time were far more extensive than they are now, but even at this time quite considerable. Probably their own cattle were originally of the short-horned, humpless type, small but very thick-set and scaling about 600 lbs. dead weight, but numerous raids have introduced the large-horned, humped type which is common to their neighbouring plainsmen, and though the former still predominate the two strains are clearly discernible, together with a third variety which is due to interbreeding, and which, while it tends to reproduce the main features of the original stock, has resulted in greater weight but an inferior yield of milk. Didinga culture largely centres round their cattle, resembling in this respect the cultures of the Dinka on the one hand and of the Masai-Topotha group on the other, but they have a great advantage over other tribes which are predominantly pastoral in the excellent and varied grazing which their country affords them, and in the climatic conditions which are ideal for cattle raising, as well as in the possession of two varieties of stock to an extent which is beyond the resources of other native pastoralists.

But once again environment has interfered, and we find that climatic conditions, an unusually fertile soil, and their economic relations with their neighbours have induced the Didinga to take an interest in agriculture which is far beyond that shown by other pastoralists. In this accommodation to their environment the Didinga have shown themselves to be like their highland kinsmen of the Boma plateau who live rather farther north on the Abyssinian border: but in contrast we find that the adjacent Longarim and the Beir living in the Pibor river, who are also their kinsmen, are content with the most primitive agriculture and with a bare sufficiency of grain crops, owing to the climatic conditions under which they exist and the general meagreness of their soil.

While the technical appliances of agriculture are equally primitive among the Didinga—until quite recently, for instance, they used digging sticks of hardened wood and had not adopted any form of hoe—their general knowledge of agriculture is surprisingly great. They know, for example, the part played by bees in fertilization, a piece of information not elicited (as one might imagine) by direct inquiry, but offered voluntarily in explanation of a poor harvest in a year when rain and fog had caused serious destruction to the wild bees. While they have not the art of terraced cultivation as have the Lotuko, nor any knowledge of irrigation as have the Lango of Logoforok, they have naturally enough an intimate knowledge of soil values as evidenced by the wild vegetation, and are able to distinguish, for example, a lime-saturated soil by the presence or absence of particular trees. Unlike most native tribes, when grain grows too thickly they transplant the seedlings to fill up gaps elsewhere, and in their variety of grain they show a sound botanical knowledge and hotly argue the relative values of the different species of millet, not only from the point of view of the flavour and

nutriment to be derived from flour of different species, but also from the point of view of relative productivity. Their knowledge must of course be empirical, which accounts for the passion with which one individual will defend a particular species decried by another. They grow two main crops, with subsidiary smaller sowings, and it sounds almost incredible that of the rain millets generally grown there are thirty species distinguished by name and favoured according to the locality, while of the dry-season millets over twenty varieties are known to me, again individually named. Contrary to expectation, which would presume that the rain crops would be grown on the hills, and the dry season's crops in river valleys where water might be expected to collect, the dry season's crops are grown on the tops of the downs and on the higher declivities; and after the end of the rains, by which time the seedlings should be strong and healthy, the crop depends entirely on night dews and on the subsoil water which is ensured by reasonably good rains during the previous months. The value then of the seasonal rivers to which I have already referred is obvious, not only their value to the Didinga who cultivate the rain crops in the valleys and foothills along the river-banks, but even more to the plain-dwellers like the Longarim and Topotha, who rely on the silt brought down annually from the fertile mountain soil to cultivate the few crops which local conditions allow them.

In another direction environment has modified the methods of their neighbours, and we find an entirely different technique of hunting adapted to the nature of the terrain. The method normally adopted by their neighbours is to surround the game with hunters, nets, or fire, and then to kill whatever animals fail to break through the cordon. With the Didinga, however, the nature of the ground prohibits the use of these methods on the hills, as the ground is far too broken and intersected by ravines and gorges to allow any cordon to be effective. Consequently their technique largely consists of driving, and in respect to the hunting of larger game like elephant and buffalo there are certain very definite spots to which the herds are driven. Such a place is Kathawa near Kikelai, and both elephant and buffalo are driven in herds from a distance, even from as far as the Kidepo, and by shouting and adroit manœuvring are induced to enter a bottle neck and plunge over a rocky gorge where they are rapidly despatched. This method of hunting, though it requires fortitude, skill, and courage, is undoubtedly very destructive of animal-life, and partly acounts for the absence of the larger species of game from the mountains, though in this destruction the Didinga spearmen have certainly been assisted by hunters from Abyssinia armed with rifles. Consequently by now elephants and buffalo have both disappeared from the mountains, though bones indicate that at one time they must have been as numerous as they still are in the plains and foothills; I do not suggest

that they have been exterminated, but that they found conditions so unpropitious that they left the mountains and joined plain herds. One venturesome buffalo returned to the hills a few years ago and continues to live in the dense bamboo forests of Kibongorok, but with this exception no survivors of either species now inhabit the highlands.

Who the Didinga are it is difficult to say. There is a tradition that they arrived at the mountains from the south-east, travelling south of Lake Rudolf. They were accompanied by the Longarim, who refused to live on the Didinga hills, as they thought them too arduous and inhospitable, and after essaying the Ngaraït range, which they found too deficient in water, occupied instead the Longarim hills and foothills to the north. Farther north again we have the Beir living on the Pibor river and in intimate touch with the natives of the Boma plateau, their own kinsmen. These are all Didinga-speaking people and claim an identity of culture and tradition, though apart from a few individuals they have not met for very many generations. Their legend is the same, except that they travelled north of Lake Rudolf, and it is clear that they had one common origin in the east. There is a recognized trade route between the Longarim and their kinsmen the Beir, which passes by Lopit hill, and it is exceedingly interesting to note that on the north point of Lopit hill there is one Beir village and one Longarim village, permanently settled there as a meeting-point for tribal visitors proceeding in either direction—a most interesting example of primitive organization to deal with environmental difficulties.

Whatever be their origin, however—and their language, which is unlike that of any of their neighbours though it bears a structural resemblance to Masai, suggests a distant Semitic origin—they are a most interesting tribe which presents many abnormal features, suggesting a clash of cultures between possibly Semitic and Hamitic groups. And it is their environment again which has done them a good turn and saved them from complete destruction, as they are a small tribe numerically and, together with several other small tribes who inhabit neighbouring ranges and appear to be distinct in language and culture, could not possibly have survived the change and chances of savage life except for the natural protection afforded them by their hills from the inundating hordes of dalesmen who have swept through them, surrounded them, and left them isolated islands of alien culture; and it is this same environment which, having saved them, has by their remoteness and inaccessibility preserved their old traditions and culture on the one hand, and on the other made them more versatile than their more numerous and powerful assailants. It has given them a greater power of adaptation, and enabled them to make more use of their resources, while they have developed an experimental outlook without prejudicing their traditional ceremonies and customs. More than any African people whom I know they have adapted themselves to their

environment, and more than most Africans they have attained to a philosophic attitude and to an appreciation of beauty and of the realities of nature.

Before the paper the PRESIDENT (Dr. D. G. HOGARTH) said: Mr. Driberg, who is going to speak to us to-night, is already known to those who read the *Journal*. He has served for some years as District Commissioner in the extreme south of the Sudan, that region where the Sudan marches both with Uganda and with the Kenya Colony. The district is very remote and known to very few. The nemesis, as far as we are concerned, is that which always pursues real exploration in very out-of-the-way parts of the world, that is to say, that with the exception of the paper-reader himself we can hardly find any one who even knows where the district is, still less anybody who has been in it. I can only say that I, having been supplied with a proof copy of the paper, went through five pages of it before I began to have a glimmering of the precise part of Africa with which the paper-reader was dealing. Finally, I came upon the blessed name of Lake Rudolf, which is, after all, remote enough; and when I read of certain rivers running east to Lake Rudolf I knew upon which side of the lake the district about which we are to hear was situated. It is very interesting for us to hear some one who has been in a district so remote, and I think you will find, as you listen to Mr. Driberg and see his views, that it is a district of remarkable variety and of remarkable interest. I will ask him now to read his paper.

Mr. Driberg then read the paper printed above, and a discussion followed.

The PRESIDENT: As I said earlier, I am afraid no one present has actually been in the region of which we have heard, but I believe Major Stevenson-Hamilton knows the surroundings of it, and I will ask him to say a few words.

Major J. STEVENSON-HAMILTON: The extremely interesting lecture to which we have listened to-night deals with the least-known portion of what is probably the least-known part of the British Empire, that is to say, the Sudan. The Sudan has one feature peculiar to itself. Approaching the Equator it is natural to suppose that the climate will gradually become warmer. In the Sudan the opposite is the case. In the north there is dry, hot, sandy country, where the thermometer goes up to 120° in the shade; towards the south exist swamps (the sudd), and these again give place to the sort of country about which we have heard to-night, well watered, hilly, with a temperate climate, in which it is possible, although nearly on the Equator, to grow European garden produce. To the traveller coming south for the first time, it is very surprising to find this state of things.

Though connected with the administration of Mongalla Province for several years, I cannot claim to know much about the Didinga country from first-hand knowledge. It is only of recent years that the civil administration has taken it in hand. In my day the tribes were perforce largely left to fight and kill each other as they pleased. Parties of Abyssinian hunters used to arrive annually and take up their quarters at villages. They would hunt elephants, raid all round, and depart eventually with slaves and ivory. Before leaving they would deposit a certain number of rifles or other firearms with their hosts, instructing the latter to collect a good supply of ivory, which they would return and remove the next year. Though British territory, it was impossible for the Sudan Government to do anything to stop such practices. It is therefore very satisfactory to learn that we are now administering the country.

There is no doubt in the past that part of the Sudan was a great migration area, through which passed tribes coming from the south. It is very interesting to note the connection between the Didingas and the Beirs in the north. The Acholi, who live to the west of the Didinga country are very closely allied to the Kavirondo tribe of Lake Victoria in Kenya and to the Shilluks, who live north of the Sudd. These three tribes are very widely divided in distance, and separated by many others having no connection with them, and yet their languages are so alike that they can all understand one another. The tradition of the Shilluks and of the Acholi is that they came from the south a few hundred years ago. In the past there was no doubt a great deal of migration, mainly from the south. Possibly the hill tribes represent the weaker peoples, and the plains people the stronger invaders.

The lecturer touched on the deforestation of Africa. There is no doubt at one time the continent must have carried a great deal of forest, similar to the Congo forests of to-day. Native cultivators cut away at the edges of the forests to make room for their crops. They use the tree ash as fertilizer. They plant and reap for two or three successive years. Then the soil becomes exhausted—for it is never manured—and they must seek a new place. Accordingly, they cut down a little more timber. Thus it can be readily understood that in a hundred years a big hole is made in these forests, which never grow again, because as the young trees show themselves they are eaten off by the goats of the natives, and this, combined with the annual grass fires, effectually prevents any of them coming to maturity. Primary forest, having once been destroyed, cannot grow again under existing African conditions. Its place is taken by stunted fireproof secondary growth, containing many acacias, and trees of no great value. One of the deficiencies of the otherwise excellent scheme of afforestation which is taking place in most of our African dependencies, is that it relies almost entirely on exotic trees, and not enough trouble is taken to grow the finer trees of the country. The reason is that exotics grow much quicker and that their economic value is therefore greater than that of the indigenous timber, which is usually slow growing. It seems a great pity, because some of the native African timber is magnificent, and I am afraid a lot of it is going to disappear on account of exploitation without replacement. I remember going over an excellent Government nursery where were grown many exotic and rubber trees, and I asked whether they were rearing any of the fine mahoganies which were growing in the adjoining forest, and at that time were being cut down wholesale for trading purposes. I was informed that there was only one young mahogany tree growing in that great nursery.

Then regarding what the lecturer said about the Didinga not caring about fish as food: I find that most interesting, and it shows how careful one must be never to generalize regarding native habits. He gave it as his opinion that these people were averse from fish because they live near rivers. Now, generally speaking, natives who live near rivers are almost amphibious, and look on fish as the mainstay of their diet, *e.g.* the Riverine Dinkas of the Bahr-el-Gebel.

The PRESIDENT: The fact that there is nobody else upon whom I can call is an indication of the novelty of what Mr. Driberg has been saying. All the names which ran so glibly off his tongue were heard by me for the first time. I do not know whether he realizes how unknown that region of which he was speaking is to an audience in this country. We are very much more ignorant than he thinks. It is proof of how wide-flung the British Empire is, that within it lies a region which is still absolutely unknown to an intelligent audience like

that gathered here to-night. However, in all seriousness we are grateful to Mr. Driberg. As he said at the commencement of his lecture, he is an anthropologist rather than a geographer, and he appeared to think that what he had to tell us about native races was not really what we wanted to hear. May I point out however that, after all, Man is rather a remarkable feature of landscape, and that the distribution of races and peoples and languages in regions as unknown as the Didinga mountains is very good geography indeed. Further, a great deal that Mr. Driberg told us half apologetically, as though it was only suitable to an Anthropological Society, was really exceedingly good meat for this Society. As for his pictures, they were far better, in my opinion, than he prophesied. Quite a number of the photographs were exceedingly good as photographs go upon a screen. But I wish he had told us a little more about them. I think he relied a little too much upon their being exactly coincident with certain things he was saying. That never quite happens. With just those very slight points of criticism, I venture to say that we have had an extremely interesting evening, and that I, for one, have learned a great deal. I believe that Mr. Driberg proposes, when he has finished his service under the Sudan administration, to lead an expedition back into that country and to study the anthropology of it as a labour of love and no longer as a matter of official routine. That is a laudable plan for any man to entertain who has gone through what he has endured.

THE LANDFALL OF COLUMBUS: AN OLD PROBLEM RE-STATED

Lieut.-Commander R. T. Gould, R.N.

Read at the Afternoon Meeting of the Society, 14 February 1927.

ABOUT two o'clock in the morning of Friday, 12 October 1492,* Christopher Columbus, who had left Gomera, in the Canaries, steering westward into the unknown Atlantic, on September 6, and had seen no land since, sighted in the moonlight, from the poop of his flagship the *Santa Maria*, the shores of a low island some miles ahead, and knew that, whatever trials Fate might have in store for him, he had made history, and that the dream of his life was a dream no longer.

The island, which he named San Salvador, and of which, a few hours later, he took possession in the names of Their Most Catholic Majesties, was undoubtedly one of the Bahamas; but its identification with any known member of that group offers a problem which has perplexed geographers ever since, and which cannot even now be said to have been absolutely resolved. In fact, one result of a prolonged controversy has been, I suggest, a gradually strengthening conviction in the minds of geographers that, to speak in mathematical language, a rigorous solution of the problem is impossible; that, as in the case of Euclid's twelfth axiom, the available data, when scrutinized, implicitly forbid the attainment of such a solution.

* Old Style. By the Gregorian calendar it becomes October 21.

If seven cities, so we are told, contended for the honour of being Homer's birthplace (as eleven, certainly, have disputed that of Columbus himself), at least five widely separated islands of the Bahama group have at different times been put forward, and their claims to be regarded as the only true landfall of Columbus strenuously advocated, by various eminent authorities. None of these solutions is free from objection—in one or two cases grave objection—while on the other hand there is something to be said for each. That is, of course, nothing unusual. There is something to be said for any of the score or so of men who have been accused of having written the 'Letters of Junius,' just as there was for each of the thirty-odd unfortunate gentlemen who, between 1800 and 1850, claimed to be Louis XVII. The present problem, however, is less complicated than either of these vexed questions —less complicated, indeed, than even the comparatively simple one of identifying Hannibal's Pass over the Alps. I have said that a rigorous solution is impossible, owing to the conflicting nature of the data; but I hope to show that if one accepts the principle of assessing the value of the various solutions by the percentage of evidence which one is compelled to disregard in each particular case, it is not difficult to pick out one solution to which there attaches a very high degree—an outstandingly high degree—of probability.

As I mentioned, the subject has been repeatedly discussed by many eminent geographical authorities; and, as I have no new theory to put forward, I should have hesitated to address you upon it if I had not felt that it might at least be useful to compile a summary of the facts and opinions relative to the problem, and so to make them more readily accessible. It may also be suggested that the past history of the controversy rather indicates that it actually handicaps a writer on the subject to identify himself with any particular theory; most of them have shown themselves far more convincing when demolishing each other's theories than when defending their own—and, with one pronounced exception, their common defect has been, I suggest, a decided lack of impartiality and balanced judgment.

The historical facts in connection with the various identifications of the landfall are, briefly, as follows:

Beginning from the earliest date at which it can be said that the cartography of the Bahamas was anything more than rudimentary, the island first claimed as the landfall of Columbus appears to be Cat Island. This identification was suggested by Catesby in 1731 * and by Knox in 1767,† and held the field unchallenged until 1793, when the learned Spanish historian Munoz put forward the claim of Watling Island.‡

When Navarrete published, in 1825, his classic work upon which all

* 'Natural History of Carolina.' 1731.

† 'New Collection of Voyages and Travels.' 1767.

‡ 'Historia del Nuevo Mundo.' Madrid, 1793.

subsequent investigation of the subject has necessarily been based,* he propounded, for the first time, the theory that Columbus' landfall was Grand Turk Island, and this was supported by his American translator, Kettell, in the Boston edition of 1827, by the Hon. George Gibbs in an article (containing arguments of much greater length than depth) in the *Proceedings* of the New York Historical Society, 1846, and by R. H. Major in the first edition of his 'Select Letters of Columbus' (London, 1847).

On the other hand, the Cat Island theory was revived and strongly advocated in Washington Irving's great life of Columbus (avowedly based in large measure upon Navarrete), which appeared in 1828. Irving, with his customary good sense, entrusted the discussion of the landfall to another hand, only referred to, in the first edition, as "an officer of the navy of the United States" who preferred to remain anonymous—although in the revised edition of 1848 he was revealed as Commander Alexander S. Mackenzie, U.S.N. The claim of Cat Island, in opposition to Navarrete's Grand Turk Island, was also supported, at about the same period, by De La Roquette in the French translation of Navarrete (1828), and by Baron de Montlezun,† while Humboldt ‡ also lent the weight of his European reputation in support of the arguments adduced by Mackenzie.

The claim of Watling Island, which, as already remarked, had originally been put forward by Munoz in 1793, and had since lain dormant, was revived and strenuously advocated by Capt. A. B. Becher, R.N., Assistant Hydrographer of the Navy, § in an extensive work published in 1856.‖ To him is due the presence, on Admiralty charts Nos. 761 and 2579, of a note against Watling Island—"Landfall of Columbus, Oct. 1492"—and also an unfortunate error in the ascription of two names on adjacent islands, to which I will refer presently.

One of the principal advocates for Grand Turk Island, R. H. Major, was converted by Becher's arguments (a rare event), and in the second edition of his 'Select Letters of Columbus' (London, 1870) and in our *Journal* for May 1871, he retracted his former views, and accepted Watling Island as the landfall. Becher was also supported by Oscar Peschel in a work published in 1858.

By this date, then, there were at least three Richmonds in the field—Cat, Grand Turk, and Watling Islands—all with a respectable array of advocates; and there was also a fourth, Mariguana Island, put forward

* 'Coleccion de los Viages . . .' Madrid, 1825.

† 'Nouvelles Annales des Voyages. . . .' Paris, 1828.

‡ 'Examen critique de l'histoire . . . du nouveau continent.' 1837.

§ This post had not then been officially established, but Becher performed equivalent duties.

‖ 'The Landfall of Columbus.' London, 1856. Some correspondence between Becher and Gibbs (already referred to as an advocate for Grand Turk Island) appears in the *Nautical Magazine* (founded and, at the time, edited by Becher) for March 1858.

by Varnhagen in 1864.* This theory, so far as I can discover, has never been endorsed by any other authority of standing; and the same remark applies to another, developed with great diligence and wealth of detail by Capt. G. V. Fox, U.S.N., in a monograph published in 1882.† He selected Samana Island as the landfall. It should be added that his essay forms probably the most complete and scholarly (although also, I think, the most obviously biassed) investigation of the subject extant, and on points of detail it is a perfect encyclopædia of information.

Capt. Fox's conclusions were very ably and convincingly criticized by Lieut. J. B. Murdock, U.S.N., in a paper published in 1884 (after the former's death). This is by very far the most competent and impartial examination of the question which I have been able to discover. Murdock concluded that Watling Island was in all probability the true landfall, but he pointed out grave defects in the reasoning by which Becher had previously arrived at the same conclusion.

The subject was also discussed at length by Sir Clements Markham in his 'Life of Columbus' (London, 1892). He adopted Murdock's views, giving at the same time a *résumé* of the other theories. His treatment of the question, however, was not altogether satisfactory. As Macaulay might have done, he wrote, apparently, with the sole object of implanting in his readers' minds the same settled conviction as he had formed himself, and his presentation, both of the facts and the arguments, is in consequence extremely one-sided, as well as being inaccurate in many points of detail. In the edition of Columbus' journal which he edited for the Hakluyt Society in the following year he abandoned argument and treated the identity of the landfall with Watling Island as a *res adjudicata*.

In addition to Markham's 'Life,' referred to above, the fourth centenary of the landfall saw the appearance of three books of first-class importance in the bibliography of the Admiral—Asensio's monumental biography, Harrisse's 'Discovery of North America,' and Fiske's 'Discovery of America.' Of these the first-named author is in favour of Cat Island, although he prints an appendix in which the case for Watling Island is ably advocated by Juan Ignacio de Armas. Harrisse and Fiske content themselves, as do Winsor (1890) and Thacher (1903),‡ with a *résumé* of the various theories.

It should be added that the navigation of Columbus' first voyage was very ably discussed by the late Earl of Dunraven in an appendix to the second volume of Filson Young's 'Columbus' (London, 1906). He did not, however, attempt to identify the landfall, but assumed that

* 'La Verdadera Guanahani de Colon' (Chile, 1864; Vienna, 1869.)

† Report of the Superintendent of the U.S. Coast and Geodetic Survey, for the year ending June 1880, Washington, 1882. (Appendix 18, pp. 347–411.)

‡ Thacher refers to an expedition financed by the Chicago *Herald* for the purpose of identifying the landfall. Presumably, so far as that powerful organ's public is concerned, the question is settled.

it was Watling Island. It may, in fact, be fairly said that since the appearance of Becher's work in 1856 the Watling Island theory has gradually made more headway, in the opinion of geographers in general, than any other, and that it is now accepted by the majority, as well as in most standard works of reference. It is, however, open of course for any one to propound a new theory, or to champion an old one, and it will be useful here to take stock of the materials on which such theories must be based, and of the general lines on which the problem can best be attacked.

The original journal of Columbus, and the map which he is believed to have drawn to accompany it, are lost—probably irretrievably. The sole first-hand authority for the voyage which has survived is a lengthy *précis* of the journal, with verbatim extracts, in the handwriting of Bishop Las Casas, the historian of the Indies.* It was examined by Munoz, and published by Navarrete in his ' Coleccion de los Viages . . .' previously referred to. Many English translations of the portions relevant to the present inquiry have been made at different times—by Kettell, Becher, Thomas (for Fox), Montaldo (for Murdock—a revision of Thomas's), Markham, and others. In the present paper I have followed Montaldo's version, which, after collating it with several of those instanced, I believe to be the most accurate.

No other contemporary account of the voyage has survived,† and the *précis* published by Navarrete must in consequence be regarded as the sole real authority for its events. It is therefore very unfortunate (although, in the circumstances of its production, not altogether surprising) that some of its statements, to which I will refer later, are obscure, if not actually unintelligible.

Contemporary first-hand maps, also, are almost entirely wanting. The nearest approach to one is the famous world-map of Juan de la Cosa, a companion of Columbus in his voyage (he was pilot and owner of the *Santa Maria*). It was drawn eight years after the landfall, in 1500. Measuring about 5 feet by 3, it necessarily shows the Bahamas on

* The date of this MS. cannot be exactly fixed. Las Casas completed his ' Historia de las Indias ' in 1561, and died in 1566. There is some ground for believing that he worked from a copy of Columbus' journal, and not from the original.

† Some years before the War there were produced in Germany a number of what purported to be facsimile reproductions of that lost copy of Columbus' journal which he is known to have jettisoned (during a storm off the Azores) when returning to Spain from his first voyage. It is difficult to believe that they could ever have seriously been intended to impose upon any but the half-witted. The text, based on Las Casas, is written in a pseudo-Gothic semi-cursive hand, and in *English* (in my copy), the reason alleged for this being that Columbus had intentionally kept this "secret journal" in a foreign tongue. I believe that this hoax was published simultaneously in several countries, the language employed for the text being varied accordingly.

The book also contained what purported to be a facsimile of Columbus' commission as Admiral, and was appropriately bound in brown paper, decorated with sea-shells, pebbles, algæ, etc.

a small scale, and not very correctly; still, it gives a surprisingly good general idea of the group, and has, I think, been somewhat unfairly criticized. Becher, for example, speaks of it as " . . . an old document that is not worthy to be called a chart. . . ." *

Many other post-Columbian world-maps of course are extant, but they are nearly all on such a scale as to be of little value for the identification of " Guanahani," the native name of Columbus' landfall.

One map however, although produced a century later than de la Cosa's, is of great importance. That is the map of the Bahamas given in Herrera's ' Historia General de las Indias Occidentales ' (1601). Herrera was the official Spanish historian of the Indies, and had access to all available official documents. It is possible, as I hope to show, to identify Guanahani from this map, and from de la Cosa's, with some certainty.

Apart from the above documents, there is little of fundamental importance in the way of material available, although, of course, much is to be learned from a study of the working out of the various theories and the arguments used for and against them. As regards local information and tradition, little is to be gleaned from this source. The gentle and unsuspicious natives who inhabited the Bahamas at the time of Columbus' arrival were, unfortunately but perhaps excusably, unversed in civilized warfare, and were in consequence rapidly and completely exterminated, leaving the islands swept and garnished for their subsequent exploitation by pirates, bootleggers, high-jackers, and other predatory animals. One or two of the native names ascertained by Columbus are still in use, and assist in the identification of some of the islands which he fell in with, but there appears to be no reliable tradition, either in the Bahamas or in Spain, which throws any light on the subject of the landfall. In fact, such tradition as exists has a directly confusing effect—for example, the name " San Salvador " has, since the beginning of the seventeenth century, been applied at various times both to Cat and Watling Islands, and the resulting confusion formed the subject of a well-meant Act passed by the Bahaman legislature only last year.

No relics, inscriptions or records which can be definitely associated with Columbus' landfall have been found on any of the Bahamas, nor does he appear to have taken any astronomical observations of its position—in fact, Las Casas' *précis*, as a whole, contains remarkably few of such observations. A small number of observed latitudes (some of which are obviously wrong) are given, but the earliest of these is dated 30 October. Even if available, Columbus' longitude of Guanahani would be practically valueless as a means of identification, both by reason of his primitive methods and of his well-known underestimate

* The best reproduction of the Bahaman portion of this chart which I have seen is that given in Harrisse's ' Discovery of North America ' (Paris and London, 1892, opp. p. 91). It should, however, be remarked that the accompanying note " Enlarged twice the original size " is incorrect. The actual enlargement is trifling—about 10 per cent.

of the length of a degree; but an observed latitude of the landfall would have been of considerable assistance.

The methods which at first sight would appear to be available for investigating the question of the landfall are as follows:

1. By working up the courses and distances sailed by Columbus between Guanahani and his last known point of departure—Gomera.
2. By using the direct evidence afforded by the charts of de la Cosa and Herrera.
3. By comparing the description of Guanahani which Columbus gives with that of the various likely islands as they exist to-day.
4. By constructing, from the data given in the journal, a plotting of the relative bearings and distances of the various islands discovered by Columbus, and fitting this in on a modern chart.

Before applying any of these methods, the following notes upon one or two general points may be useful.

The courses, bearings, distances, and dimensions given in Columbus' journal are, of course, only approximate. One could hardly expect them to be otherwise. He had no hand-log, and his dead-reckoning must therefore, even when unfalsified, have been quite sketchy, while the distances and dimensions of the islands which he sighted are probably no better than rough eye-estimates. The allowance, if any, which he made for leeway (which in the ships of his time was very considerable) is nowhere mentioned. His courses and bearings appear to have been given to the nearest two points; at least, while he occasionally logs intermediate points such as N.N.W., he does not employ bye-points. His distances are generally given in round figures, and mostly in leagues. Capt. Fox, in the monograph previously referred to, made a careful investigation of the probable values of Columbus' "league" and "mile," and reached the conclusion, which appears well founded, that no great error would be occasioned in calling the "league" 3 nautical miles, and the "mile" three-quarters of the present nautical mile. He also published in the same work a very careful investigation by C. A. Schott (U.S. Coast and Geodetic Survey) of the probable amount of variation obtaining in the Bahamas in 1492. This showed that, in all likelihood, such did not exceed a quarter of a point westerly.* In view of the approximate nature of Columbus' bearings and distances, therefore, it appears best to treat them as being "true," and to convert all quoted distances to nautical miles. While on the subject of distances, it is interesting to note that Columbus frequently speaks of short distances as "two lombard shots," or "two cross-bow shots." The lombard was a species of culverin—a smooth-bore cannon of small calibre and short range.

* Becher found it necessary, in support of his views, to assume that the variation was a point and a half westerly, but there seems to be absolutely no justification for this assumption.

I have not succeeded in obtaining conclusive evidence of its carrying power, but there would probably be no great error in regarding a "lombard shot" as two cables, and a "cross-bow shot" as half a cable.

The first method, that of working up Columbus' run from Gomera to the landfall, is impracticable. The great circle run from Gomera to the nearest point of the Bahamas is about 3100 miles, and at this distance the whole chain of the Bahamas, from Bahama in the N.W. to Grand Turk in the S.E., would subtend an angle of only about 11°; in other words, even if one could depend upon having worked out Columbus' "course made good" to within half a point, which is a much closer degree of approximation than one could reasonably expect from such data, one would still have all the Bahamas to choose from, while to identify any particular island with certainty one would have to be able to depend upon the "course made good" being correct to about a quarter of a degree—a total impossibility.

The second method—that of using the direct evidence afforded by the charts of de la Cosa and Herrera—is more promising, although not altogether conclusive in the results which it affords. As already stated, while de la Cosa's chart is, for its date, surprisingly accurate in the general idea which it affords of the Bahama group, it is woefully inaccurate in detail. Broadly speaking, it indicates that Guanahani is a comparatively small island, standing out a little to the N.E. from the general N.W.–S.E. line of the Bahamas and towards the centre of that line, approximately due northward of the strait dividing Cuba from San Domingo, and due eastward of the N.W. point of Cuba.

On Herrera's chart, which supports this inference, the Bahamas are indicated with more precision, while in addition all the islands at present known to exist are shown (de la Cosa's chart is defective as regards the N.W. islands). The topography of Herrera's chart is markedly inaccurate, but the *relative* shapes and sizes of his islands are not far from the truth, although their general trend, considered as a whole, has an anti-clockwise error of about 15°.

If we accept the evidence given by the charts of de la Cosa and Herrera, which is in essential concordance, there are *primâ facie* grounds for immediately non-suiting two claimants out of our "Big Five"—Cat, Watling, Grand Turk, Samana, and Mariguana Is. For on both charts we see Samana, Mariguana, *and* Guanahani shown as three entirely separate and distinct islands. It has, indeed, been argued at length by Fox that the name "Samana" was, at the date of Columbus' discovery and for some time after, applied to one of the Crooked Islands, while the present Samana was Guanahani. His arguments are ingenious, but little more. On the other hand, the position given for Samana by Herrera is admittedly very incorrect—much more so, relatively speaking, than that of any other island on his map.

Both charts, moreover, combine against the claim of Grand Turk.

If this were accepted, we should have to assume that all the islands shown by both de la Cosa and Herrera to the south-eastward of Guanahani were figments of their imaginations—an assumption which a glance at the modern chart will show to be untenable. A reasonable deduction, it is suggested, from the evidence of the charts is that they show only two admissible hypotheses—namely, that Guanahani must have been either Cat Island or Watling Island, the probabilities being greatly in favour of the latter.

I turn now to the third method—that of attempting to identify Guanahani from the description of its topography, etc., recorded by Columbus. That description, briefly, is as follows. It was an island of moderate size, low, well wooded, with abundance of water and fruit, having no high hills, with a very large lagoon in its middle, and encircled by a reef. One side trended to the N.N.E., and Columbus especially noted a peninsula which, as he remarked, could easily be fortified.

The Bahamas, which have a total area of about 4400 square miles, and contain some 700 islands and cays,* may be thought to offer a tolerably wide field to any one who, on the evidence of this somewhat vague description alone, should set out to identify the island to which it refers. But, as I hope to make plain later, any one who puts forward a considered theory as to the location of Columbus' landfall is morally bound, or so it appears to me, not only to select an island corresponding with this description, but also one from which Columbus' track—so far as this can be made out from the fragments of his journal preserved by Las Casas—and the islands and cays discovered along that track, can be brought into reasonable agreement with the topography of the Bahamas as at present known. This condition practically reduces the necessary comparisons to the " Big Five " of which I have already spoken.

I take this opportunity of referring to a suggestion which has several times been mooted; namely, that our troubles in identifying the landfall of Columbus possibly arise from volcanic or other extensive changes which have taken place in the Bahamas at some date between 1492 and the beginning of the nineteenth century, by which time their topography, chiefly as the result of work done by H.M. Surveying vessels, had emerged from the comparative twilight of " sketch surveys " and other dangers to navigation, and was known in all essentials as it is known to-day. Such a theory is, of course, impossible satisfactorily to disprove, or even to dismiss as highly improbable: the calamity of Martinique in 1902 goes to show that volcanic disturbances on an almost unparalleled scale have before now given the West Indies a dreadful eminence in the history of seismology; but at the same time we should,

* These figures are taken from the recent ' Maps of the Bahamas: published by authority, 1926.' This work states that " the island officially known as San Salvador is generally called Watlings (*read* Watling), and is now accepted as the island called San Salvador by Columbus."

I suggest, follow Newton in saying *hypotheses non fingo.* If a matter can be cleared up without the aid of suppositions which, however possible, are highly improbable, we have no right, on an ordinary estimate of probabilities, to invoke them. The volcanic changes which would destroy the general outlines of the topography of the Bahamas, or which would, in other words, allow us to " re-mould it nearer to our heart's desire " in respect of some particular theory, would connote an alteration in general level of many yards—and in support of such a sweeping and Wegener-like assumption there is, so far as I am aware, no evidence whatever.

Let us, therefore, turn to the question of comparing the description of Guanahani given by Columbus with that of the " Big Five " as contained in the Admiralty Sailing Directions and other standard sources of information.

Cat Island is roughly 40 miles long N.W. and S.E. by about 10 miles wide at its S.E. end. Its maximum height is about 400 feet.* At the S.E. end (the end likely to have been examined by Columbus) are a number of lagoons. It has no fringing reef (it should, however, be noted that such a reef would in all probability have suffered very extensive changes between 1492 and, say, 1830) and no pronounced portion of coast-line trending N.N.E.

Grand Turk is low and has large lagoons and an encircling reef. On the other hand, it is exceedingly small (only about 2 miles long by 1 mile in breadth), no portion of its coast-line runs for any distance N.N.E., and it has no woods, and no peninsula.

Watling Island is 13 miles long by about 6 broad. It has a very large lagoon at its centre, and is extensively wooded. The greater portion of its eastern shore runs N.N.E. and S.S.W., and it is low, nowhere exceeding 140 feet. It is also encircled by a reef. On its eastern side is a narrow peninsula, forming a natural breakwater to a moderate-sized harbour.

Mariguana Island is 23 miles long, east and west, and from 2 to 6 miles broad. It has no real lagoon, but a few small coastal ponds, the largest about 5 miles in length and, as they all are, very narrow. It is low-lying, nowhere exceeding 100 feet. Its S.E. extremity has a short coast-line, some 5 miles in length, running about N.E. and S.W. It has no fringing reef; on the other hand, there is a well-defined peninsula halfway along its northern coast.

Samana Island (also called Samana Cay and/or Atwood's Cay) is about 8½ miles long by 1½ miles broad. It runs practically E. and W.,

* Markham, in his 'Columbus, p. 95, remarks, " Guanahani was low; Cat Island is the loftiest in the Bahamas." It is undoubtedly true that Cat Island is slightly higher than its neighbours, but quite imperceptibly so. All alike are very low-lying, and " lofty " seems a somewhat misleading term to apply to an island 40 miles long, and nowhere rising more than 400 feet above sea-level.

and has no eastern side at all. It has no lagoon or fringing reef, and no peninsula.

Let it be noted that the absence of all or any of the "stigmata" is not necessarily a conclusive proof or disproof of a particular claim.* Much may have happened in four centuries: a lagoon may have formed or filled up; erosion may have converted a peninsula into an island, or accretion rendered it an indistinguishable part of the neighbouring coastline; a belt of timber may have widened or withered. At the same time since, by the rules of probability, it is unlikely that all these causes should all have operated in the same direction in any one case, it is to be inferred that the fairest estimate of the relative merits of the five claims is to be arrived at by comparing the present facts with Columbus' description without making any allowance for subsequent changes, whose amount and extent it is quite impossible to ascertain or even to estimate.

If we do this, the account will run as follows: Watling Island complies with all the requirements; after it, in order of minimum rejection, come Mariguana, Cat Island, Grand Turk, and Samana.

Finally, we come to consider the information, with regard to the location of the landfall, afforded by the descriptions which have survived, in Las Casas' *précis*, of the relative sizes, shapes, distances, and bearings of the various islands seen by Columbus.

After leaving the landfall the Admiral, who had, he records, made up his mind to pass no island without taking possession of it, visited in turn three other islands, and then, after sighting a group of small islets, fell in with a fifth island, much greater in size than any of the remainder. This island was undoubtedly Cuba.

There is sufficient information available in Las Casas' abstract of the journal to construct a rough charting of these islands, but certain assumptions are necessary, and there are one or two defects of importance. The fifth island, as I remarked above, was undoubtedly Cuba, and the fourth and third can be identified with a fair amount of certainty. The second is more doubtful, and, unfortunately, although we are given the distance of the second from the first—the landfall—we are not given its bearing.

It has been generally assumed, even by the usually very careful Murdock, that the second island bore S.W. from the landfall, this assumption being based on the fact that Columbus stated, in his journal for Saturday, October 13, that he intended to sail, on the following evening, S.W. in search of other islands. But as evidence to his actual course this is entirely negatived by a statement, in the journal for the following day, that having set sail he saw so many islands that he did not know which to make for first, but that he finally selected the largest.†

* So far as one important feature, the lagoon, is concerned, there is another island, Great Inagua (21° N., 73½° W.), which can compete with any of the "Big Five." I do not, however, envy the lot of any one who endeavours to work out a consistent track for Columbus from Great Inagua to Cuba.

† His masthead height may have been 60 feet. From this elevation Cat Island (400 feet) would have been visible some 30 miles.

Actually this statement is very obscure, for it does not seem possible that from any position in the neighbourhood of his probable landfall he could have seen any such archipelago as he describes. Possibly, but not probably, he was misled by clouds hanging over islands not actually in sight, below his horizon. But in any event, whatever its value, I submit that it entirely inhibits us from assuming that he necessarily steered S.W. to the second island.

Let me illustrate. Suppose that a friend told you that he was going next day to the Motor Show, and that he intended to buy a car of a certain make. If you simply heard later that he now owned a car, you would naturally conclude, on that evidence, that it was of the make he had mentioned. But supposing that he wrote to you and said that when he got to Olympia he saw so many cars that he couldn't make up his mind at first, but finally selected a car which suited him more than any other, you would then be left in complete uncertainty as to what particular make of car it was. I apologize for labouring the point, but it is of some importance, and does not seem to have been fully appreciated in the past.

Summarizing all the evidence contained in the journal as to the size, bearings, distances, etc., of the five islands, it amounts roughly to the following:

The second island (" Santa Maria de la Concepcion ") lay about 18 miles from the first island (" San Salvador " or " Guanahani ")—bearing not stated. The side towards Guanahani ran N. and S. 15 miles, the other E. and W. 30 miles. It was probably in sight from a point somewhere near Guanahani, but not from that island itself.

The third island (" Fernandina ") was in sight from the second, and about 24 miles west of it. It extended about 75 miles or more in a direction roughly N. 25° W. to S. 35° E. On the east side was an inviting-looking harbour which was found to be shallow. This had a narrow entrance with a rocky islet on the east side of its centre.

The fourth island (" Isabela ") was not in sight from the third. Off its northern shore was a rocky islet, bearing east from the third island; distance not stated, but about four hours' run with a fair wind. From this islet the coast ran S.S.W.* to a prominent cape. The native name of the island was " Saometo " or " Samaot." It was even more beautifully wooded than the other islands, and somewhat higher, but by no means mountainous. It was suspected to consist of two closely contiguous islands, and had large lagoons.

The group of islets (" Islas de Arena ") formed a chain extending in a N. and S. direction. On their south side was shallow water for some 15 miles. They were situated roughly 70 miles W. of the west side of the fourth island.

* This bearing is partly inferred. At another place in the journal it is given as W. 35 miles, which would make the cape in sight from the third island.

The fifth island ("Juana") was sighted after running about 70 miles S.S.W. from an anchorage to the southward of the group of islets.

It is possible, with these materials, to put together a very rough sketch-chart which should give some idea of what Columbus' own map, if he ever drew one, would have resembled. In so doing, strictly speaking, where the bearing of one island from another is given with no indication of the particular portion of the island to which the bearing refers, one should put the centre of the island on the bearing. But as, in the present case, both the second and fourth islands are stated to lie about the same distance eastward of the third (a long island running about N.N.W. and S.S.E.) and not to have been in sight from each other, it seems a fair assumption that the second lay somewhere off the N.N.W. end of the third and the fourth somewhere off the S.S.E. end.

It should be noted that this sketch-chart has been put together, almost entirely, by means of the relative bearings and distances of the various islands one from another, as given in the journal, and that, except where it was absolutely necessary, no use has been made of the courses and distances logged by the ships of Columbus. These latter are vitiated by all sorts of errors, such as over- or under-estimation of speed, errors of steering, leeway, current, etc., uncertain both in amount and in direction.

It is not, of course, claimed that so rough a chart can give more than an indication of the relative configuration of the islands visited by Columbus, but it will, I think, be found amply sufficient to assist in testing the comparative merits of the six complete tracks from the landfall to Cuba, which have been put forward by different authorities; and such a test is, I suggest, the most searching and the most efficient to which any theory of the landfall can be subjected.

Taking these tracks in chronological order, the first is that of Navarrete, who selected Grand Turk as the landfall, and who also assumed, on no authority that I have been able to discover, that Columbus always sailed towards the westward in his courses from the landfall to Cuba.

Navarrete 1824

Navarrete makes the Caicos group the second island, Little Inagua the third, Great Inagua the fourth, and Cuba the fifth (all the tracks

agree upon this last point). The courses and distances which Columbus must have traversed to follow such a route are entirely at variance with anything to be found in the journal, as also are the dimensions of the various islands; for example, the selected third island, Little Inagua, is only 7½ miles long, instead of Columbus' 75 or so. The "Islas de Arena" are not identified but simply omitted.* As Murdock severely but justly remarks, ". . . It is hardly possible to imagine that this track is derived from the log at all."

Mackenzie starts from Cat Island, which he assumed to be the landfall; and it should here be noted that there is one argument in favour of this theory which applies to it exclusively.† That is, that it is the only one which attempts to explain what, following Dr. Watson, the celebrated and Bœotian companion of Sherlock Holmes, might well be called "the singular incident of the light in the night-time"—an incident which has always been one of the standing puzzles in connection with this subject. About 10 p.m. on the night of October 11—*i.e.* about four hours before making the landfall and an hour before moonrise—Columbus and others with him on the poop of the *Santa Maria* saw, or thought they saw, a light some distance away in the darkness. It is described as looking like the flame of a small candle, alternately raised and lowered. It seems to have gone out of sight again not long after.

Mackenzie 1828

Judging by the speed of the ships, as given in the journal for this night, the light must have been some 35 miles or so eastward of the landfall, and well to windward of it. Markham considers that it must have been in a native canoe, but does not suggest any reason why such a craft should have made so laborious and purposeless an excursion out into the Atlantic, away from the Bahamas, and practically dead to windward. Nor does it seem likely that a native canoe would have had

* Murdock states that Navarrete omitted the fourth island, as well as the "Islas de Arena," but this is incorrect. See above.

† So far as the "Big Five" are concerned. The selection of Conception Cay (Conception I.) as the landfall would also allow of our supposing that the light was on Watling I.

much use for a light, or have carried the appliances for making and exhibiting it.

Murdock cuts the Gordian knot by suggesting that the light was non-existent—a figment of excited imaginations. This theory of collective hallucination is certainly possible, but it seems rather a drastic way of treating inconvenient evidence. Mackenzie, on the other hand, supposes that the light was on Watling Island, and that Columbus, owing to the darkness, missed that island, although seeing the light, and passed on to make his landfall at Cat Island. This theory, taken by itself, seems reasonable, as the run between light and landfall would then fit in quite well. But it is, on any supposition, very surprising that if Columbus, as he seems to have done, looked on the light as a sure indication of the long-expected land, he should have calmly proceeded under all plain sail and let it go out of sight astern, instead of clewing up and waiting for daylight, or even for moonrise.

From Cat Island Mackenzie sends Columbus to Conception Cay, which he selects as the second island, making Great Exuma the third, and Long Island the fourth; after which he despatches him south-westward to Cuba, straight across the Great Bahama Bank. This portion of the route and also that between Exuma and Long Island is, and probably always has been, practically unnavigable.

In addition to this fatal defect in Mackenzie's track, his second island is far too small, and his third island is not in sight from it. Moreover, he makes Columbus go from Conception Cay to Exuma without apparently noticing Long Island, although we are told in the journal that he resolved to pass no island without taking possession of it.

Becher 1856

Becher, having fixed on Watling Island as the landfall, makes Rum Cay the second island. As explained, the latter's bearing from the landfall is uncertain, while as regard distance, Rum Cay fills the bill more or less satisfactorily. Columbus, however, describes the second island as about 5 *leagues* N. and S. by 10 E. and W., while Rum Cay extends only about those numbers of *miles* in such directions. Becher neglected this point; but it does not seem to be a fatal objection. It was later shown by Murdock, and I think conclusively, that Rum Cay is a more generally

satisfactory " second island " than any other yet proposed, and it may be noted that its dimensions agree in relative proportion, although not in actual amount, with those given in the journal. It is possible that Las Casas, or the copyist, simply wrote " leagues " for " miles," * which would explain the whole difficulty; but one hesitates to make such assumptions, since it is fatally easy, in this manner, to twist facts to suit theories.

But Becher, having gone so far, proceeds to go definitely and demonstrably wrong in his further discussion of the track. Mis-translating an expression in the journal, " . . . cargué las velas . . ." (" clewed up the sails ") as " . . . I made sail . . ." he sends Columbus, in flat defiance of the journal, past the second island, Rum Cay, without stopping, and thence to the third island, which, like Mackenzie, he identifies as Great Exuma. He then, to the confusion of common sense and, one would think, in utter forgetfulness of his own very considerable nautical experience, assumes that during the night of October 16–17 Columbus, in a gale and off an unknown coast, ran 100 miles in ten hours along the east coast of Long Island without noticing that it was not part of Exuma, and so arrived on the following day at Crooked Island, which Becher selects as the fourth island. Putting aside the fact that no sane man would navigate in so utterly reckless a manner, it need merely be pointed out that the gale in question only existed in Becher's imagination, the journal for that night recording " . . . the wind was light and did not allow me to reach the land to anchor . . . ." As Fox rather caustically suggests, Becher appears to have confused Columbus with Vanderdecken.

Varnhagen 1864

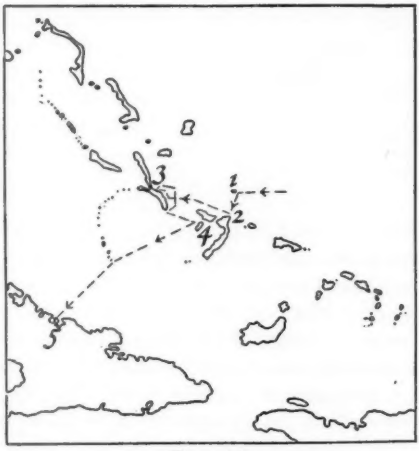
From Crooked Island Becher makes Columbus anchor south of the Ragged Islands, which he identifies with the " Islas de Arena," and then lets him go on his way, without further perilous adventures, to Cuba.

A curious error, arising directly out of Becher's resolve not to let Columbus stop at the second island, still appears on the Admiralty charts. The name of that island, " Santa Maria de la Concepcion," is divided, one half appearing as C. Santa Maria (Long Island), and the other half as Conception Island!

* Markham, having mooted this assumption in his ' Columbus,' states it as a simple fact in his translation of the ' Journal.'

Varnhagen, assuming Mariguana as the landfall, makes the second island Acklin Island. Regarding Acklin and Crooked Islands as one (they are closely contiguous), this would agree fairly well with the dimensions given in the journal, although not at all with the distance between the first and second islands. He fixes on Long Island for the third island, and makes Columbus circumnavigate it—after which he brings him back to Crooked Island, which he must have passed on his way to Long Island, and makes him regard it as an entirely new discovery—the fourth island! Like Becher, he identifies the " Islas de Arena " with the Ragged Island chain.

Fox, although selecting Samana as his Guanahani in place of Mariguana, is otherwise in substantial agreement with Varnhagen. Like him, he goes to the Crooked Island group for the second island, although he selects Crooked Island itself, and not Acklin. He too makes Long Island the third island, and brings Columbus back, afterwards, to the Crooked Island group for the fourth island, this time selecting Fortune Island, close S.W. of Crooked Island. He agrees with Varnhagen (and with Becher) as to the identity of the Ragged Island group with the " Islas de Arena."



Fox 1882

From the text of the journal itself, and on such grounds alone, the plan, followed by Varnhagen and Fox, of making Columbus sail halfway round the Crooked Island group, proceed to Long Island, and return again to the Crooked Island group under the impression that it was an entirely new and different " fourth island," out of sight of the " second island—*i.e.*, practically, of itself—seems entirely untenable, and remarkable only as an excellent example of the extent to which very able and honest men can, under the influence of theories, shut their eyes to facts. It seems scarcely necessary to " flog the dead horse " any further, but it may be pointed out that Long Island, for instance, is not visible from any part of the Crooked Island group, whereas Columbus most distinctly stated that the third island was in sight from the second.

The track worked out by Murdock in 1883 differs greatly from its predecessors—not only in its configuration, but in its superior plausibility, and also in the method by which it was obtained. Instead of starting

with some island assumed as the landfall and then constructing a track from this to Cuba, Murdock reversed this plan, and worked backwards from Cuba until he reached the landfall.*

Murdock 1884

At the outset of applying this method, however, there appears to be an almost insuperable difficulty. Although the fifth island of Columbus can only—in view of its size, the trend of its shores, the corroborative evidence of Columbus' successors and his own later voyages, and the persistence of its native name from then till now—be identified with Cuba, the part of it which Columbus first sighted, and the harbour in which he first anchored, are not so easy to locate. There are at least four candidates for the latter—Port Nipe, Port Gibura, Port Padre, and the Boca de Caravela. The only real clue is a statement in the journal that the harbour had a wide entrance with 12 fathoms of water. None of the four exactly corresponds with this. Murdock, with considerable probability, selects Port Gibura.

It might be thought, then, that whether you work out the track forwards or backwards you have to assume a starting-point. But, as Murdock showed, this can be avoided in working from Cuba to the landfall. The first point to identify from Cuba is the anchorage at the "Islas de Arena," which, from the journal, is found to have been about 75 miles N.E. from the harbour in Cuba. If, therefore, one takes the outline of the N.E. coast of Cuba and transfers it bodily 75 miles N.E., this line should pass through or near the anchorage south of the "Islas de Arena," and a short examination shows that these can only have been the Ragged Islands.

Having determined this point, it is similarly possible to work backwards to the position, off the fourth island, from which Columbus took his departure for the "Islas de Arena." This is given in the journal as being S.E. 21 miles from the south point of the third island, and about W.S.W. from the rocky islet at the north end of the fourth island, while it was about 65 miles E. $\frac{1}{2}$ N. from the "Islas de Arena" (which have

* This is undoubtedly the more scientific method. It is, however, curious to note that Caleb Cushing, in an article in the *North American Review*, remarks that after applying it "we . . . shall be convinced that Guanahani is no other than Turk's Island"!

just been identified as the Ragged Islands). These data point with practical certainty to Long Island as the third island, and Crooked Island as the fourth,* the rocky islet being Bird Rock off Crooked Island, which agrees exactly, both in position and appearance, with the account given in the journal. The harbour on the east side of the third island was probably Clarence Harbour, Long Island.

So far then, working backwards from Cuba, the "Islas de Arena" and the fourth and third islands have been identified with very fair certainty. It remains to identify the second island, and thence, if possible, the landfall. And it is here that the real difficulties begin.

As previously suggested, since the third and the second islands are both stated to be situated about the same distance—25 miles or so—eastward of the third, and out of sight of each other, it is a reasonable assumption that the third lay off its S.E. extremity, and the second off its N.W. If this is accepted, the second island almost selects itself—it must be Rum Cay; there is no other available. On the other hand, there are two objections to this identification. One is, that the distance to Long Island is smaller than Columbus states, being only 15 miles instead of 21 or so; and the other is the discrepancy in size, although not in shape, already mentioned. The distance, however, was probably overestimated by Columbus; in fact, it must have been, for if it had really been 21 miles the third island could not have been seen from the second unless it were far higher than any land now known to exist in the Bahamas. Murdock considers that the fact that Rum Cay is the only possible "second island" in sight from Long Island must be set off against the discrepancy in distance; but I suggest that he might, with more reason, have argued that this discrepancy was in fact unimportant, and that the only difficulty was the discrepancy in size. On the whole I think that, reviewing and balancing all the data, there cannot be much doubt that Rum Cay has a pre-eminent claim to be regarded as the second island, although it must be admitted that the identification is not so convincing as in the cases of the islands sighted subsequently.

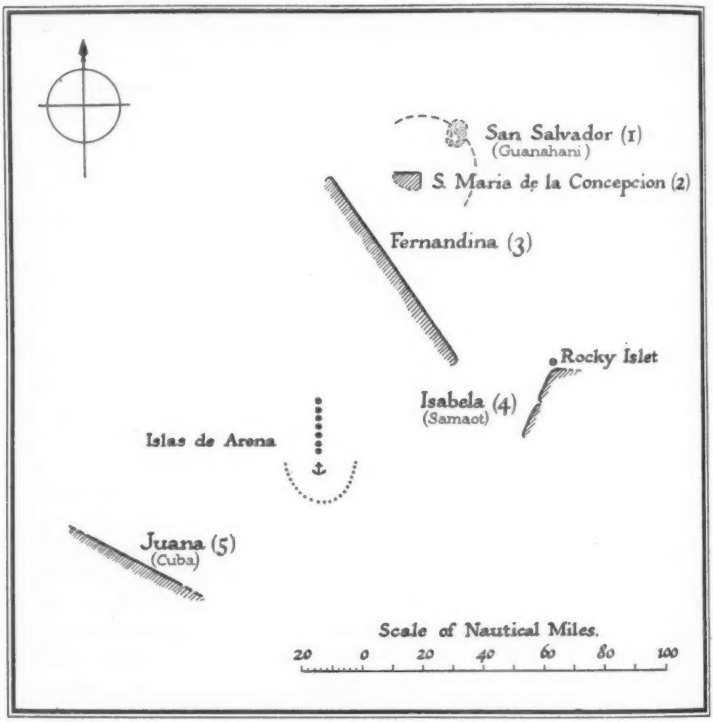
So far I have, in essentials, simply followed and endorsed Murdock's argument. But, for the reasons I have already given, I cannot altogether assent to his final step. Having reached Rum Cay, he says in effect this: "The second island lay about 21 miles S.W. from the landfall. Rum Cay is the second island, and it lies about 19 miles S.W. ¼ S. from Watling Island. Therefore Watling Island must be the landfall."

The correct conclusion, I suggest, should be this: "Rum Cay is, in all probability, the second island. That island, we are told, lay about 18 miles from the landfall, bearing not stated. The landfall must be

* It may be noted that the native name of Crooked Island is "Samoete": compare the name "Samaot" recorded in the journal as being given by the natives to the fourth island.

an island agreeing with Columbus' description, and lying on or near a circle of 18 miles' radius drawn from Rum Cay."

Actually, it makes little difference. If we draw such a circle, there are but two islands on or near it. Watling Island is one of them, Conception Cay the other. Watling Island agrees in every respect with the account in the journal—Conception Cay does not.* Cat Island, whose southern extremity does accord fairly well with the description,

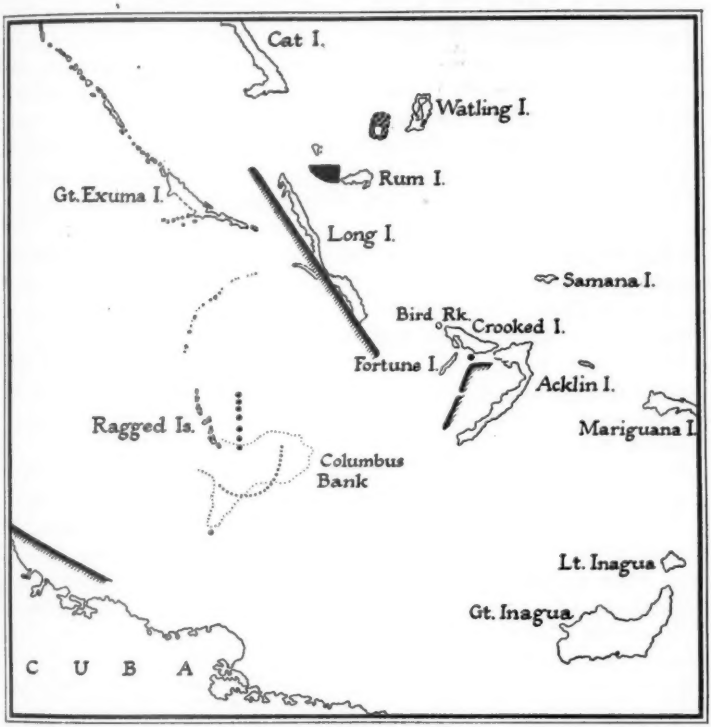


Relative positions of the five islands sighted by Columbus laid down from the data on p. 414. *Gould* 1927

and which alone of the "Big Five" claims to explain the mysterious light, is a long way outside the circle—its minimum distance from Rum Cay is 34 miles—and there is no other possible claimant; at least, no other now rising above the surface of the Atlantic.

* It is very small—2¾ by 1¾ miles—grows only stunted vegetation, and has a conspicuous detached islet on its east side which Columbus would certainly have mentioned. On the other hand, it possesses a lagoon and a fringing reef, part of its coast runs N.N.E., and, equally with Cat. I., its selection as the landfall would explain the mysterious light.

I ought, in conclusion, to indicate a question, in connection with the identification of Guanahani, to which it does not seem likely that any satisfactory answer will ever be given. I have already referred to two difficult points—the light, and the archipelago said to have been seen by Columbus immediately on sailing from Guanahani; and I might mention that I once thought I had evolved a theory which would cover both of them. I should explain that I had then been studying the question



The relative positions superposed upon a modern chart of the Bahamas

for fully six hours, and was, in consequence, quite convinced that I knew all about it. I thought that by selecting the S.W. point of Cat Island as my landfall (Mackenzie took the S.E. point) and assuming that Columbus, on weighing, stood westward for some distance across Exuma Sound, he would then have sighted the string of cays stretching N.W. from Great Exuma, while the light, as Mackenzie suggested, would have been on Watling Island. Unfortunately, further consideration knocked the bottom out of this theory altogether. For it to hold good Great Exuma must have been the second island, with whose description it does not

agree to any noticeable extent, while all around the corresponding position in which the third island ought to be there is, unfortunately, a painfully aching void.

The difficulty to which I am now referring, however, offers no loophole for such off-hand speculations. It arises from an entry in Columbus' journal about a month later (20 November 1492). He there states that, being in a position E.S.E. of Babeque, he was at the same time 12 leagues from Isabela (the fourth island), adding the exasperating note that Isabela is 8 leagues from Guanahani, or San Salvador. It seems quite impossible to reconcile the courses, distances, and bearings given in the journal between October 12 and 20 with the statement that the landfall and the fourth island, or any part of them, are only some 24 miles apart. The minimum distance between Watling Island and Crooked Island is about 67 miles. We must, I think, take refuge in the last resort of the baffled investigator, and declare that the passage in question is corrupt.

It may be noted that while Columbus himself never revisited the Bahamas, and while they were not much explored by his immediate successors, there is a passage in the account of Ponce de Leon's first voyage to Florida in 1512 which seems, at first sight, likely to throw a good deal of light on the identity of Guanahani. Unfortunately, it flatters only to deceive. According to Herrera, de Leon on his sixth day out from Porto Rico arrived at Caicos, in the Bahamas, and on the eighth at an island named Yaguna, in lat. 24° N. From this he went to another named Manuega, in lat. 24° 30′, and on the eleventh day arrived at Guanahani, in lat. 25° 40′ N., which, it is added, was the same island as that first discovered by Columbus, and by him named San Salvador.

Whatever the actual error of these latitudes might be (and it is probably considerable) we could, assuming that it was fairly constant for all, use them to identify Guanahani if we were certain of Yaguna and Manuega; or, conversely, we could, if we were certain of Guanahani, identify the other two. But we are not certain of any of them, and it is fatally easy, in hunting round for Yaguna and Manuega, to fit these names on to some promiscuous pair of islands which agrees with that theory of the identity of Guanahani which one happens to hold. Both Humboldt and Fox certainly appear to have done so. I am afraid that this itinerary of de Leon's is not of much assistance.

But I suggest that while we may never, in the absence of Columbus' full journal and/or map, have absolutely irrefutable evidence as to the identity of Guanahani, we have at least enough to support a strong and reasonable conviction. Like many other celebrated historical mysteries, research has narrowed the issue down to a comparatively small compass. Just as it is fairly certain that the Man in the Iron Mask was either Mattioli or Eustache Dauger; just as it is long odds on Sir Philip Francis for the Junius Stakes against any other nominee; so, I suggest, is it reasonable to take the view that nearly two centuries of discussion and

research have by no means been barren of result; that they have ventilated the question pretty thoroughly; and that they have shown that, although the data that we possess embody so many and to some extent so conflicting requirements that it is highly improbable and probably impossible that any one island will ever be found to satisfy them entirely, there is one which stands head and shoulders above the others in the number which it satisfies and the fewness of those which its selection compels us to reject. And that island is Watling I., or, if we must give it its new legal title, (San Salvador or) Watling*s* Island. Whether we go by the evidence of the charts of de la Cosa and Herrera, by that of the description of the landfall given by Columbus himself or by that of the track which he followed from the landfall to Cuba, and on whatever system we "weight" the results of these examinations, we are, I submit, independently led in each case to the same conclusion, while the cumulative effect of this triple agreement is almost irresistible. Eclipse is first, and the rest nowhere. In rejecting, if we decide to reject, the claims of Cat Island (which, next to Conception I., I should class as *proxime accessit*), Mariguana, Samana, and Grand Turk, we imply no censure upon their advocates—rather, I suggest, do we actually honour their labours, all of which have, indirectly, contributed to at least a provisional solution of this famous problem.

It is invidious to make a selection, but it is difficult in such a matter to avoid having a preference, and I should like to take this opportunity of putting it on record, as my personal opinion, that it is to Lieut. (now Rear-Admiral) J. B. Murdock, U.S.N., more than to any other man, that the world owes the first clear and impartial statement, unshaken in essentials by later criticism, of the reasons which go to show that in all probability Watling Island is the true Guanahani—the San Salvador of Columbus, and the spot where, on that eventful morning in 1492, our half of the world began, for the first time, to know *where* the other half lives. *Palmam qui meruit ferat.*

Before the paper the CHAIRMAN (Sir PERCY COX) said: The President is unavoidably prevented from being here this afternoon and has asked me to take the Chair for him. I have to introduce Lieut.-Commander Gould, of the Hydrographic Department of the Admiralty, who is to read us a paper on the Landfall of Columbus. The Landfall of Columbus has been a matter of perplexity to geographers for the last four hundred years. Various permutations of the voyage have been worked out and adopted by students, but the origin of Commander Gould's paper was a short article in our *Journal* for October 1926 ("The Landfall of Columbus," vol. **68**, p. 338). To a correspondent who put forward the claim of Grand Turk the Society had replied that there is no one island in the Bahamas group that meets all the requirements of the narrative, and it is not likely that the question can ever be definitely solved. The article went on to say that "the Admiralty are however more confident," and quoted the West Indies Pilot on San Salvador or Watling Island, "the established landfall of Columbus." The Hydrographer at once asked Commander Gould

to examine the problem, and this afternoon's paper is the very interesting result of his work.

Commander Gould then read the paper printed above, and a discussion followed.

Admiral H. P. DOUGLAS (Hydrographer of the Navy): I think you will agree with me that we have listened to a most interesting lecture, and I am particularly pleased that it affords evidence of the care taken by the Admiralty as regards the names on their charts. The Admiralty often hear, from people in various parts of the world, that they do not give the correct names on their charts, but I think that in this case you will agree that undoubtedly, from all the evidence available, Watling Island is the one which is best fitted to bear Columbus' name "San Salvador." In case any one should think that the subject is, at this date, somewhat academical, I may say that the lecture has not been compiled in Government time! I was interested in the slide showing the superimposed map. It is, from the Hydrographic Department's point of view, almost complete evidence. But there is just one other point which it might be of value to discuss, and that is, looking at it (as one can) from a sailor's point of view, the circumnavigation, or partial circumnavigation, of the landfall. Running before a north-easterly wind, Columbus must have passed either north or south of it to get a lee; it is improbable that he would, or could, have landed on the weather side. As between Cat Island and Watling Island, he could hardly have landed at the south-east point of either; the south-east point of Cat Island is not a sheltered anchorage any more than the south-east point of Watling Island. Now, if he went round the north point of Watling Island he could have found anchorage there at his "two lombard shots" off the shore; but if he went round the north side of Cat Island he would not have got through to an anchorage—probably he would not have tried to, because he must then have sighted the mass of breaking reefs which fill the channel between it and the island of Eleuthera. That being the case, if his landfall was Cat Island he must have gone round the south side and have anchored more or less under the lee of the south-west extremity of that island. In such a position he would not have seen a lagoon, while if he anchored either on the north-west or south-west side of Watling Island he would have. That, to my mind, is a strong argument in favour of Watling Island *versus* Cat Island.

It is unfortunate that the Bahaman Legislature has now altered the island's name to "Watlings," and we are rather puzzled about this at the Admiralty, because we do not understand why it has been done. Every one knows that Watling was a celebrated buccaneer, and if the island is to be known as Watling's island—the island of Watling—it ought to have an apostrophe. We shall take that up, and, if necessary, we must amend the charts. On the other hand, it is a pity that, at this distance of time, it is difficult to tackle the mistake made by Becher in naming the north point of Long Island "Cape Santa Maria" and giving Booby Cay the name of "Conception Island." The whole of Columbus' name "Santa Maria de la Concepcion" should, apparently, have been given to the island of Rum Cay. I dare say, however, that if this error is discussed with the Bahaman Government we may be able to improve matters a little upon this point as well.

I think you will agree with me that it is gratifying to hear that a United States naval officer has already given such a clear and valuable summary of all which we have heard this afternoon, and that the conclusions to which we have come are fully supported by Admiral Murdock.

The CHAIRMAN: Would the Librarian to the Admiralty like to say anything?

Mr. W. G. PERRIN (Admiralty Librarian): I am afraid it would be only waste of time for me to say anything, because this question of evidence is one for expert navigators. As regards the logic with which Commander Gould has presented his conclusions I can find no fault with it.

Mr. HEAWOOD: I can only express my admiration for the way in which Commander Gould has dealt with this difficult subject. I cannot claim to have studied it at all closely, and in asking one or two questions, I do so simply with a view to eliciting information, and without any wish to criticize. Does Commander Gould know of a paper by J. W. Redway, published in 1894, in which the opinion of Fox in favour of Samana as the landfall finds support; and if so, does he think it unworthy of consideration? Mr. Redway cites other maps than those of La Cosa and Herrera, and I confess I was a little surprised that Commander Gould should have made a jump of a century from one to the other, disregarding entirely all maps of the intervening period, some of them by men of great nautical experience. Some of these maps apply the names Guanahani and Samana to one and the same island, and even when they are assigned to different islands this surely is no certain disproof of identity, considering the way in which features are constantly found duplicated in old maps. A second question is, cannot a study of the winds and currents as now known be some help in checking or correcting the estimates of distances sailed, necessarily made by the navigators in ignorance of their existence? It would be interesting to hear Commander Gould's view on this point.

Note added after the Discussion by Mr. Heawood.

The above remarks were made on the spur of the moment, and represent no considered opinion on the subject. Still, I cannot help doubting whether the two maps cited by Commander Gould stand on such a totally different footing from the rest as to be alone worthy of consideration. The official Spanish chart-makers of the early decades of the sixteenth century must have had much original information to work upon—at least as good as was at the disposal of an historian writing many years later, with no special qualifications either as a seaman or cartographer. If, as is possible, the early official mapping of the Bahamas is too vague to be of any help, ought we not to discard the evidence of maps altogether, for even La Cosa's gives but a distorted picture in many parts? Again, granted that our present knowledge of winds and currents gives no help, can we trust at all to estimates of distance made by those who entirely lacked such knowledge? This does not, however, lessen my appreciation of the general soundness of Commander Gould's methods and the lucid way in which he has re-stated the problem. He has certainly shown that the odds are greatly in favour of Watling Island as the landfall.

Lord EDWARD GLEICHEN: Has volcanic action anything to do with the subject? In other parts of the world where volcanic action is frequent islands disappear and rise again in a strange manner. Is it conceivable that volcanic action may have had anything to do with the contradiction in regard to these islands?

The CHAIRMAN: There are two points I would like to ask Commander Gould to include in his reply. He mentioned that the Bahama Bank was unnavigable and might be ruled out of consideration. Is it known what the draught of the vessels at the time of Columbus was? Is it quite clear that they could not have sailed over the Bank if it had been in their way? Secondly, it

seems surprising to me that it has never been possible to get any corroboration of the native names. Commander Gould has explained that most of the natives of the island were exterminated at the time, but all the other islands must have had a name for their sister islands. It is surprising that it has never been possible to get any more evidence on that point.

Lieut.-Commander GOULD: The point raised by Admiral Douglas is one more which tells strongly in favour of Watling Island as against Cat Island. To my mind, the identification of Watling Island with the landfall is fairly certain, so far as the known evidence goes. If any further important evidence should come to light which would necessitate a reversal of this view it would probably take the form of some old map or document in the Spanish archives. It is, of course, still possible—but most improbable—that Columbus' own journal and/or map may one day be found.

With regard to the points raised by Mr. Heawood, I have not yet seen Mr. Redway's paper, although I knew of its existence. I confess that I did not attach very much importance to consulting it, bearing in mind the very poor case which so able an advocate as Fox could make out for Samana, and the pronounced physical differences between that island and Columbus' description of the landfall.

The question as to the old maps is very difficult to answer. Undoubtedly there are many post-Columbian maps of America which might be consulted—Kretschmer, for example, in his 'Entdeckung Amerika's' Atlas reproduces nearly sixty. You might spend weeks analyzing all such maps, but I do not think that you would come to any very definite conclusion. I took those which seemed to me to be most important—de la Cosa's and Herrera's—because the former was drawn by one of Columbus' companions who was present at the landfall, and the latter is, so to speak, the official standard map. I do not think that any others you can adduce are equally important, and many of the intermediate ones have no pretensions to accuracy. They are often more pictorial than geographical, being covered with castles, saints, flags, etc.; and, generally speaking, I do not regard them as being of great value one way or the other.

With regard to Samana being shown as Guanahani on some such maps, it does not surprise me at all. In fact, it would not surprise me to find Cuba itself called Guanahani on a map of the kind, although I have never seen this. The point about Guanahani, Samana, and Mariguana appearing on the maps of de la Cosa and Herrera as separate and distinct is that if duplication of islands occurs on an old map, as suggested by Mr. Heawood, it generally happens in respect of islands in the same latitude. But in the present case all three are shown in both maps as separated by appreciable differences of latitude.

The matter of winds and currents has been gone into thoroughly by Fox and Murdock. In my opinion, any conclusion you reach is not so much conditioned by the ascertainable facts as by the preliminary assumptions you make, such as the ship's initial position, the time she was on some particular course, the exact force and direction of the wind, and so on. I am afraid you get very little further, however deeply you go into it.

With regard to volcanic action, as I explained in the paper it is doubtful whether any volcanic action which could have changed the Bahamas so completely during the intervening centuries as to mask the landfall has ever occurred. We know that where you have had whole islands, such as Graham Island, coming up and sinking again you find evidence, in your soundings, of volcanic dust, etc., and you generally find igneous rocks or lava deposits in

the neighbouring islands. So far as I know, there is no evidence of this kind in the Bahamas.

In reply to Sir Percy Cox's question as to whether Columbus could have crossed the Bahama Bank, the draught of his ships is not definitely known. I think that even the largest, the *Santa Maria*, was of what we should now call less than 100 tons gross, and probably did not draw more than 9 to 10 feet of water. It is quite conceivable that he might have got across, but on the other hand it would have meant taking enormous risks. Certainly he would not have done it when he could easily see a much safer way round; and, beyond all doubt, he would not have attempted it at night. I think that one can safely rule that out. He might, by great skill, have taken his vessels over, but I do not think that any discoverer in unknown waters would ever cross such a bank if he could avoid it.

With regard to the question of native names, it is, I believe, a fact that comparatively few of the Bahamas have definite native names, so that it is not at all surprising that one cannot trace the name "Guanahani." That, however, is a question for ethnologists and philologists rather than for geographers.

Note added after the Discussion by Lieut.-Commander Gould.

With reference to Mr. Heawood's additional remarks, the points raised by him are of great importance, and I am very glad that he drew attention to them, since, on re-reading my paper, it certainly gives the impression that they had been rather cursorily examined. This, however, is not actually the case. When collecting material, I re-examined the analyses of winds and currents given by Fox and Murdock, and only decided to omit a discussion of the results from the paper when I became convinced, for the reasons already given, that they were of little practical value. It was for this reason that, in attempting to reconstruct Columbus' chart, I relied as much as possible upon the recorded inter-insular bearings and distances (which, however much they may be affected by personal equation, probably have a more or less constant error, and are in correct proportion) and as little as possible upon the courses and distances logged as run by the ships.

Similarly, I consulted a great many of the post-Columbian maps of America, although of course I cannot claim to have covered this field exhaustively. I saw, however, enough of them to make me conclude that the majority could scarcely be regarded as contributing any evidence of material importance to a solution of the problem of the landfall; and from a rather chaotic mass of material, much of it obviously at fourth or fifth hand, I selected for mention the two maps which, as I thought and still think, were decidedly the most authoritative and reliable guides to follow. Such a selection, however, is purely a matter of personal opinion, and it was for that reason that I did not lay more stress upon the evidence they afforded.

The CHAIRMAN: We have had a most interesting paper. I think we realize what a great amount of study and industry must have been devoted to the task of evolving order out of the chaotic state of the evidence. We have had a clear exposition, and I think we go away with some idea of the reasons which have prompted our own Admiralty and the American Navy to accept Watling Island. It is a matter of congratulation that our experts and those of the United States Navy are at one in the matter, and we may regard it as practically laid to rest as far as any question of the kind can be. It only remains for me to ask you to thank Commander Gould for his paper.

NEW POLITICAL BOUNDARIES IN THE CAUCASUS

W. E. D. Allen

Folding map follows p. 496.

Events in the Caucasus, 1916–1924.

THE former Russian Vice-royalty of the Caucasus comprised all the territory between the line of the Manich Depression on the north—bordering the Government of Astrakhan and the territory of the Don Cossacks—and the Turkish and Persian frontiers on the south and south-east. With the collapse of the Imperial *régime* in the spring of 1917, and the seizure of power by the Bolsheviks in the autumn of the same year, a process developed throughout the Russian Empire of disintegration into component national units. That part of the Vice-royalty lying north of the Caucasus mountains, comprising the Government of Stavropol and the Provinces of the Kuban and Terek Cossacks, remained politically a part of Russia, and was during 1918 and 1919 one of the principal theatres of military operations during the Russian Civil War. In the eastern mountains, including the Chechen and Ingush districts and Daghestan, acutely anarchic conditions prevailed. The tribesmen became alternately the dupes of Turkish and Tatar political adventurers, and the victims of the military excursions of the contending " Red " and " White " factions. In the first month of 1918 a " Republic of the Mountaineers "—alternately " Gorskaya " or " Dagestanskaya Respublika "—was formed, with a capital, first at Vladikavkaz, later at Nazran, and finally at Temir-Khan-Shura (now Buinaksk). In March 1919 Denikin occupied Temir-Khan-Shura. In the autumn, however, the tribes rose, and Denikin was only suppressing them with difficulty at the moment when his northern front was broken by the Bolsheviks. It was not until a year later that the Bolsheviks finally re-established Russian authority in the mountains in a six months' campaign lasting until May 1921, which involved much sharp fighting, and of which a recent account, published in Moscow,* recalls Baryatinski's operations against Shamil.

In Transcaucasia, the three republics formed during 1918 on a national basis failed to maintain both their independence of Russia and their democratic systems of government. The failure was due as much to economic as to political reasons. In April 1920 the " Mussavetist " or nationalist Government of Azerbaijan, who had for a long time been contending with a severe crisis in the petroleum industry—a crisis insoluble without access to the Russian market—withdrew from

* ' Krasnaya armiya v gorakh ' (' The Red Army in the Mountains : Operations in Daghestan,' by A. Todorski). 187 pages, with maps, plans, and tables. " Voenni Vestnik," Moscow, 1924.

Baku, and the " Hummet " or local Bolshevik party received the Russian troops, who arrived on April 27 to occupy " the oil city." By the autumn of 1920 the position of the Armenian Republic had become hopeless, unless substantial support, both financial, diplomatic, and military, could be obtained from the Allies. This was not forthcoming, and in December, when the troops of Kiazim Pasha Karabekr had already occupied Kars and Alexandropol (now Leninakan), the members of the Dashnakist (nationalist) Government retired to Tabriz, and the local Bolsheviks set up a Soviet Government, and welcomed the arrival at Erivan of Russian troops to hold the Turkish advance.

To all political observers it was now obvious that the situation of the Georgian Republic was hopeless. The position of the Republic was weak, both financially and economically, and psychologically the people were either divided or indifferent. In March 1921 the Soviet troops, without a declaration of war, invaded the territory of the Republic at four points—by the Kura Valley, the Daryal Defile (Georgian Military Road), the Mamison Pass (Ossetian Military Road), and the Gagri Pass (Black Sea coast-road). Within a month the whole of Georgia was in Bolshevik occupation, and Russian authority had been restored over the whole of the former Vice-Royalty, with the exception of the border districts seized by the Turks from the Armenians in December 1920, and from the Georgians in March 1921.

The whole of Transcaucasia was, however, still subject to sporadic outbreaks, inspired by the national or religious sentiments of the different populations. In June 1920 there were Tatar risings at Elisavetpol (now Ganja) and Shamkhor, and in the spring of 1921 two or three Dashnakist outbreaks in Armenia; in the autumn of 1922 and the spring of 1923 an expedition was engaged in the pacification of Svanet'hi, and suffered some reverses; and in the spring of 1924 a formidable Georgian revolt swept the Rion (Rhioni) valley and the eastern district of Kakhet'hi.

The Transcaucasian Socialist Federated Soviet Republic.

The growth of national self-consciousness among the minor racial groups of the old Russian Empire has been a slow and obscure process during the last fifty years. The movement, or rather the various movements, are complicated by a number of conflicting tendencies, which have had a contemporary development. Economic Socialism and political internationalism; Agrarianism and Communism; the essentially Pan-Slavonic, yet anti-Muscovite, basis of Ukrainian and of White Russian nationalism; the hesitation in Georgia and in Armenia between a " European " and a " Russian " orientation; among the Tatars between an " Osmanli " and a " Russo-Turanian " orientation, between " Pan-Turanism " and " Pan-Islamism ": all these trends and attitudes have tended to ferment a political and economic confusion, which has expressed and is expressing itself in innumerable conflicts, which continue

to have their reactions over the whole of Eastern Europe and Western and Southern Asia.

The Bolsheviks have attempted to evolve a solution which will marshal and combine all the conflicting tendencies and movements of the nationalities of the former Russian Empire, in the formula of the Union of Soviet Republics.

The Union comprises officially six Soviet Republics or Federated Soviet Republics: the Russian Socialist Federated Soviet Republic, the White Russian Socialist Soviet Republic, the Ukrainian Socialist Soviet Republic, the Transcaucasian Socialist Federated Soviet Republic, the Usbek Socialist Soviet Republic, and the Turkoman Socialist Soviet Republic. Formally, therefore, the Union is no more distinctly Russian than it is Ukrainian, Usbek, or Georgian. The constitution of the Union is extremely complicated, and for its elucidation a separate paper would be necessary.* In effect it may be said that all the elaborate rights of the constituent nationalities of the Union are not permitted to interfere with the dictatorship of the Communist Party. The nationalities have, however, scope for a limited development, primarily linguistic and cultural, within the Union. The whole system is both interesting and significant. The philosophy upon which the system is based aims in theory at a World Federation of peoples, and in practice and policy, at a Federation of Asiatic peoples, the influence of which may well prove both attractive and disturbing from the Balkans and Western Asia to Korea. Within the Union itself the system is already provoking a conflict of opinion between (1) those elements who are concerned primarily with world-revolution, (2) those who wish to adopt a Pan-Slavonic basis, and (3) those representatives of minor nationalities who are anxious to develop and improve the position of the national groups. It may at

* The Constitution of the Union is set out in a Foreign Office Blue Book, 'Soviet Russia: A Description of the Various Political Units existing on Russian Territory, to which is appended the Constitution of the Union of Socialist Soviet Republics of July 6, 1923 (with two maps). Compiled from material supplied by the British Commercial Mission in Moscow' (H.M. Stationery Office, 1924). This publication has now become in some minor respects out of date. It was published before the formation of the Turkoman Socialist Soviet Republic, and before the liquidation of the Gorski Autonomous Socialist Republic (see p. 438 of this paper). In the spelling of Caucasian names the Russian forms have been very closely followed.

For the Constitution of U.S.S.R. and for present political divisions compare also the 'Soviet Union Year-Book,' 1926, 'The Statesman's Year-Book,' 1926, and Dr. Haden Guest, M.P.—'The New Russia.' In none of these publications is the present political geography of Central Asia really adequately elucidated. Much information on both the Caucasus and Central Asia may, however, be found in *Novi Vostok* ('The New East'), a periodical publication of the All-Russian Scientific Association of Eastern Studies.

But probably the best available authority for the new political divisions is the Administrative Map of S.S.S.R. (1) European Part, 1 : 3,000,000, January 1925; (2) ditto, 1 : 4,200,000, October 1925; (3) Asiatic Part, 1 : 10,500,000, February 1925 (all in the Society's collection), published by the Cartographical Section of the National Ministry for Internal Affairs.

any rate be anticipated that the divisions established within the Union will have a permanent value at least in the collective minds of the nationalities concerned, and any future government in Moscow which attempts to return to a definite Pan-Slavonic basis, will be confronted with the necessity of combating or placating varied and strengthened national movements over all the southern and eastern extent of the Union.

In March 1922 a Plenary Conference of the Central Executive Committees of the Soviet Republics of Georgia, Azerbaijan, and Armenia met to consider the association of the three Republics into the Transcaucasian Socialist Federated Soviet Republic, and in December of the same year their decisions were approved and confirmed by the First Transcaucasian Session of Soviets of Workmen's and Peasants' Deputies.* The boundaries of the Federation included only the Transcaucasian or southern half of the former Vice-Royalty of the Caucasus, and excluded both Daghestan and the districts ceded to Turkey by the Treaties of Moscow (16 March 1921) and Kars (13 October 1921). The frontiers of the Federation with the Russian S.F.S.R. and with Turkey may be considered in conjunction with the specific boundaries of the different Republics.

Boundaries of the Transcaucasian Republics.†

GEORGIA S.S.R. (capital Tiflis, which is also the capital of the T.S.F.S.R.) comprises the former Government (Guberniya) of Tiflis [with the exception of the Circuit (okrug) of Zakatali and part of the District (uezd) of Borchalu] and the whole of the former Government of Kutais. There are three lesser units either united with or included in the Republic.

(*a*) The small Abkhaz people, numbering possibly 100,000, have been constituted into the Abkhazia S.S.R. (capital Sukhum), which is united by treaty with Georgia S.S.R.‡ The Abkhazian Republic comprises the Region (raion) of Gagri, and the four Districts of Gudauti, Gumist, Kodor, and Samurzakan.§ The Abkhaz, who find mention in many ancient writers from Strabo to Evliya, are among the most interesting

* Zumbadze, 'Constitution of the T.S.F.S.R.' Tiflis, 1923.

† For further details the reader is referred to the following publications (in Russian):
(1) A. F. Lyaïster and G. F. Chursin, 'A Geography of the Caucasus: The Country and its Peoples' (pub. Trans-C. Comm. University, Tiflis, 1924).
(2) 'Transcaucasia: A Statistical-Economic Compilation' (pub. Higher Economic Council T.S.F.S.R., Tiflis, 1925).
(3) 'Informationer (*lit.* Spravochnik) for the T.S.F.S.R.' (Tiflis, 1926).
It is a point of interest that in recent publications the Soviet Government has adopted, for purposes of linguistic classification, the "Japhetic Theory" of Professor N. Y. Marr of Leningrad. See Lyaïster and Chursin, pp. 269–340, and also current publications of the Russian Academy of Sciences (in the Society's Library).

‡ F.O. Blue Book, p. 9, states that Georgia "includes" A.S.S.R. Abkhazia. The status of Abkhazia, in being formally united by treaty with Georgia, is in theory slightly different from that of A.S.S.R. Ajaristan, which is included in Georgia.

§ *Ibid.*, p. 9, has "six districts in the former Province of Sukhum."

of Caucasian tribes. Their language has affinities with the Kartvelian (Georgian) group and is on the other side, remotely connected with the various dialects of the Circassians (Cherkes) and the Kabardins.

(*b*) The Georgian-speaking Mussulman hill-men, along the Turkish frontier, have been constituted into the Ajaristan * Autonomous S.S.R. (administrative centre Batum), in which are included the seven Regions of Kobuleti, Chakva, Batum, Ajari-Tskhali, Kedi, Khuloi, and Skhalti.

(*c*) The districts north of Gori, whose Ossetian inhabitants were always a source of anxiety to the Tiflis nationalists, form the Southern Ossetia † Autonomous Province. The administrative centre of Southern Ossetia is Tskhinvali, and the Province comprises parts of the Regions of Gori, Dushet, Shorapan, and Racha.

The northern boundaries of Abkhazia S.S.R. and Georgia, that is, of the Transcaucasian S.F.S.R., follow the small river Psoi, falling into the Black Sea between Sochi and Gagri, and in a general direction east-south-east, continue along the watershed of the Western Caucasus to the sources of the Kodor and the Ingur.

Immediately south-west of Adai Khokh, the boundary as between the Russian and the Transcaucasian Federated Republics makes a considerable southward loop, which leaves in Russian hands the peak of the important Mamison Pass. The boundary cuts across the Georgian Military Road at a point south of the post of Lars, leaving Kazbek and the Daryal defile in Georgia. East of Daryal the boundary takes an east-north-easterly direction, covering the territory of the Georgian-speaking Tushes and Pshavs, and bringing the headwaters of the Argun and of the Andi-Koisu within Georgian territory. At a point north-east of Dano it curves sharply south, and then runs east-south-east along the watershed of the Avari-Koisu and the Alazan.

The eastern boundary of Georgia with Azerbaijan follows the old local boundaries of the Districts of Signakh and Tiflis; and that with Armenia follows the former boundaries between the Governments of Tiflis and Erivan, with the exception that the Circuit of Lori, formerly in the Georgian District of Borchalu, is now part of the Armenian District of Bambak.

The southern frontier of Georgia contiguous to that of Turkey is of great interest.‡ Here, by the Treaty of Kars, the frontier has been restored as it was before 1877, except that the small region round Batum is still included within the Soviet Union. The recent history of this country has been chequered. By the Treaty of Brest-Litovsk the

* F.O. Blue Book, p. 9, gives spelling Ajaria, "comprising the former Batum Province." Parts of the Province of Batum were ceded to Turkey by the Treaty of Kars (see p. 435).

† *Ibid.*, p. 9, has "The Autonomous Region of Yugo-Osetie."

‡ See *Geographical Journal*, June 1923.

territory, including Batum, was ceded to Turkey. Ottoman troops occupied all the ceded territory, and also Akhaltsikh, Akhalkalaki, Atskura, and Ozurgeti, in the first month of 1918. Only German intervention checked their advance on Tiflis, and persuaded them to concentrate their attention on Baku and the Eastern Caucasus. Under the terms of the Armistice the Turks withdrew, and the Armenians occupied most of the disputed territory, with the exception of Artvin and Ardanuch, which fell to the Georgians. In 1920, when the Turks attacked the Armenian Republic and recaptured Kars, the Georgians entered Ardahan. A few months later, when the Russians invaded Georgia, the Turks occupied Artvin, Ardanuch, and Ardahan without resistance, and advanced to Batum, whence after a skirmish with Soviet troops they again withdrew.

By the Treaty of Kars the Turks evacuated only Alexandropol (Leninakan).* They were confirmed in the possession of the District of Artvin, the southern part of the Batum District of the Province of Batum, the whole of the Province of Kars, and the Surmali Region of the Government of Erivan. The whole area is estimated to represent about 18,000 square miles. The frontier is still subject to delimitation, and as late as last July a Turkish Boundary Commission was working in Tiflis.†

The provisional Georgian-Turkish frontier, beginning at the village of Sarp, on the Black Sea coast, just south of Batum, goes east until it crosses the river Chorokh near the village of Maradidi. It then penetrates the southern part of the Shavsheti range to the northern boundary of the former Circuit of Artvin; following this boundary and the northern boundary of the former Circuit of Ardahan, it cuts across the Lake of Khozapin, to the mountain of Uch-Tapalyar, where the frontiers of Georgia, Armenia, and Turkey converge. This region with the Laz districts of Turkey, extending as far as the hinterland of Trebizond, forms the home of exceedingly intractable Georgian-speaking Mussulman tribes. The Ajars rose against the Russians in 1877 and again in 1914 and 1917, and in 1918–19 they were a constant source of trouble to the Tiflis Government. The Ajars at present remaining within the boundaries of Georgia receive particularly favourable treatment from the Soviet Government, and they show no immediate anxiety to join their recently "liberated" co-religionists across the Turkish frontier. They are aware of the economic decay which has fallen on the districts ceded to Turkey, and when I was among them last summer they were congratu-

* Many place-names in the Caucasus have recently been altered, both on national and political grounds. Alexandropol [formerly (1826) Gumri (? Gimri—Kimri—Kimmerians)] is now Leninakan. Khankend = Stepanakert (? from Stepan Shaumian, a noted Armenian Communist); Elisavetpol = Ganja (old Armenian Kantzak); Petrovsk = Makhach-Kala; Mikhailovo = Hashuri; Ekaterinodar = Krasnodar; Temir-Khan-Shura = Buinaksk, etc.

† The latest information is that the work of the Commission is now complete.

lating themselves upon being beyond the scope of Kemal's " hat decree." They are keen hunters, and also inveterate smugglers, doing a roaring trade in contraband in Batum, Akhaltsikh, and the surrounding districts.

AZERBAIJAN S.S.R. (capital Baku) comprises the whole of the former Government of Baku and the former Government of Elisavetpol (Ganja), with the exception of the District of Zangezur, and part of that of Kazakh, and includes the Zakatali Circuit of the former Government of Tiflis.

Mountain Qarabagh Autonomous Province (administrative centre Khankend, now Stepanakert) has been constituted to give local self-government to the Armenian majority which inhabits parts of the former Districts of Jevanshir, Shusha, Qarayaz and Kubatli. A minor autonomous division has been formed within this in order to give representation to groups of Kurdish villages in the western parts of Jevanshir and Shusha, and northern Kubatli.

These Qarabagh Armenians are a particularly fine type, renowned throughout the Caucasus, and indeed in Russia, for their military qualities. Until the middle of the eighteenth century they maintained their independence under their own Meliks, who took part in the Transcaucasian Campaign of Peter the Great (1722). Qarabagh has given many famous leaders to the Russian army, including Lazarev, Loris-Melikov and Tergukhasov. The famous partizan leaders of the late war, Murad and Nazarbekian, came from the Qarabagh. Hanoyan, the present Chairman of the Central Executive Committee of the T.S.F.S.R., comes from Qarabagh, and also General Gaïsh, one of the best-known Soviet cavalry leaders. The region is rich in historical remains, which are at the present time being investigated by a Russian Scientific Expedition.*

Nakhichevan Territory † is a political curiosity. It forms a triangular " enclave " within Armenia S.S.R., and adjoins the Persian Araxes frontier. The population contains a substantial Tatar majority, and for this reason it has been excluded from Armenia S.S.R. and placed under the protectorate of Azerbaijan S.S.R. It covers the territory of the former District of Nakhichevan, and contains the towns of Nakhichevan, Julfa, Ordubad, and Bash-Nurashen. It is of some strategic importance, since Julfa forms the terminus of the Caucasian railway system, and controls communications with Tabriz and Persian Azerbaijan. Julfa will also form the junction of the proposed new line which will link Baku direct with Tabriz and Erivan.

The northern boundary of Azerbaijan with Daghestan A.S.S.R. continues in a south-easterly direction along the watershed of the Alazan and the Samur, until north-east of Nukha it curves east, and then

* F.O. Blue Book omits reference to Mountain Qarabagh.

† F.O. Blue Book describes Nakhichevan as an " Autonomous Province."

north-east, meeting the Samur at the village of Ermolovski, and keeping the course of that river until its debouchure in the Caspian.

The southern frontier of Azerbaijan follows the old Russo–Persian frontier of 1914: the river Astara, the Talish chain—Belyasuvar—whence it cuts due north-west across the Mughan Steppe, to its junction with the Araxes, which it follows to the Armenian boundary, where the small district of Megrin alone separates Azerbaijan from its autonomous protectorate of Nakhichevan.

ARMENIA S.S.R. (capital Erivan) includes the former Government of Erivan, with the exception of the Districts of Surmali (Turkish) and of Nakhichevan. It includes also, from the former Government of Elisavetpol (Ganja), the District of Zangezur, and part of the District of Kazakh, formed by the Region of Delijan. The Lori Region, formerly part of the Government of Tiflis, is also included in Armenia.

Armenia has suffered a reduction of approximately half her extent as a result of the political developments of 1920–21. She has lost the whole of the old Government of Kars, besides outlying districts. Her two chief centres of population—Erivan and Alexandropol—(now Leninakan) are within gunshot of the Turkish frontier. The sacred mountain of Ararat is once more in Turkish hands, as are also the ruins of the royal city of Ani. Finally, the Armenians have had to abandon all prospect of acquiring the rich plain of Alashkert, where they might have settled the thousands of their refugees.

The new Armeno–Turkish frontier—the old Russo–Turkish frontier of 1877—runs in a south-easterly direction from the junction of the Georgo–Turkish frontier round Uch-Tapalyar. It follows the small but historic stream of the Arpa Chai (the Barley river) to its junction with the Araxes. The Araxes continues to form the frontier between the Soviet Union and Turkey, to the convergence of the three frontiers north-east of Mount Ararat. The boundary of Armenia S.S.R., enclosing the Nakhichevan Territory, touches the Araxes again a few miles below Ordubad.

Administrative Areas north of the Caucasus.

The Soviets, in pursuance of the policy of decentralization on a national basis, have divided the northern and north-eastern parts of the former Vice-Royalty into one Autonomous Socialist Soviet Republic and a number of autonomous provinces.

DAGHESTAN A.S.S.R., established by decree January 1921—capital Petrovsk (now Makhach-Kala)—comprises the former Province of Daghestan, the Khasav-Yurt Circuit of the former Province of Terek, and parts of the Province of Terek and of the Government of Stavropol inhabited by the Qara-Nogai Tatars. The Daghestan A.S.S.R. thus includes a great expanse of steppe, and its frontiers stretch from the Kuma to the Samur.

The principal tribes included in the Daghestan A.S.S.R. bear names celebrated in the Mountain War, and immortalized in Mr. J. F. Baddeley's "Russian Conquest of the Caucasus." Not less than twenty-five different languages are spoken in the mountains, and they may be divided into five principal linguistic groups. The present numbers of the mountaineers as estimated by Lyaïster and Chursin (1924) are of interest: (1) Avars (234,000); (2) Laki (Lesghi) or Kazi Kumuks (90,000); (3) Dargis (130,000); (4) Kiurins (215,000); (5) Andis and Didos (45,000).

The various tribes scattered over the country between the estuary of the Kuban and middle reaches of the Terek, have been grouped into separate Autonomous Provinces. These are (1) Adighe-Circassia A.P., occupying a narrow stretch of country along the left banks of the Laba and the middle Kuban (administrative centre Ekaterinodar, now Krasnodar*); (2) Qara-chai†-Circassia A.P., inhabited by Turks and Circassians (Cherkes) scattered over the northern slopes of the Western Caucasus along the valleys of the Urup, the Zelenjik, and the Teberda (administrative centre Batalpashinsk); (3) Kabarda–Balkaria A.P., inhabited by "mountain Tatars" who are settled on the northern side of the Central Caucasus over the valleys of the Baksan, the Chegem, and the Urukh (administrative centre Nalchik); and (4) Chechnia A.P., inhabited by the Chechens of the former administrative Circuit of Grozni.‡ The Ossetians, the Ingushes, and the Sunja Cossacks, inhabiting the districts round Vladikavkaz, constituted from January 1921 to June 1924 the Gorskaya A.S.S.R. The Gorskaya Republic has now been liquidated, and there have been established the Northern Ossetia A.P., Ingushetia A.P., and Sunja Circuit. The administrative centre of these Autonomous Provinces is Vladikavkaz, which itself enjoys a special *régime* as a "free town." The same kind of *régime* has been applied to Grozni, which is the administrative centre of the Chechnia Autonomous Province.

The rest of the old Vice-Royalty of the Caucasus, comprising most of the old Government of Stavropol and parts of the former Province of Terek and of the Black Sea Government, constitute an administrative unit known as the North Caucasus Territory. Parts of the former province of the Don Cossacks are in this Territory, which is included in the Russian S.F.S.R., and is in enjoyment of no peculiar *régime*.

To conclude, the present Soviet policy of autonomy and decentralization, which is at least effective in the spheres of language and local

* F.O. Blue Book gives capital as Tokhtomukai (p. 7). Soviet Year Book (1926) and other Russian publications give Krasnodar.

† F.O. Blue Book, p. 7, gives spelling "Karachaev," and describes the inhabitants of Kabarda (Russ. Kabardintsi, Eng. Kabardins or Kabards) as "Kabarda."

‡ F.O. Blue Book, p. 7, states that the "Chechensk Region is formed from the Chechensk district (?) of the Gorski Republic." No Russian publication indicates the Autonomous Chechen Territory as having formed part of the now defunct Gorskaya Republic.

culture, gives promise of being an experiment of absorbing interest. The political results cannot be foreseen, and may not become evident before many years have elapsed. It may be said, however, that the new trend towards the autonomy of nationalities within the Union is not a mere essay in cartographical fantasy but represents a considered policy, which is intended to counter, and in some cases actually anticipates, a new consciousness of national individuality among those many groups of varied racial composition and of different degrees of culture who find themselves within the borders of the Soviet Union.

NOTE ON THE TRANSLATION OF RUSSIAN ADMINISTRATIVE TERMS

The question of the translation of Russian administrative terms is exceedingly complicated, and to the best of my knowledge no standard method has ever been adopted. For example, the word *Oblast'* is rendered by different authorities "Province," "Territory," "Region." If we take into consideration the general Russian usage of the various words, the following are perhaps the most satisfactory translations:

GOVERNMENT, *Guberniya:* formerly applied to the largest administrative unit of the Russian Empire and retained as an administrative term by the Soviets. There are no Governments in the Caucasus now.

PROVINCE, *Oblast':* formerly having a more military implication than *Guberniya*, and originally applied to outlying territories in Siberia, Turkistan, and the Caucasus, *e.g.* Maritime Province, *Primorskaya Oblast'*. It is also the ordinary Russian word for "province" in the figurative sense, *e.g.* "the province of geography." (The word *Provintsiya* is used of a Province in a foreign country.)

TERRITORY, *Krai:* primarily meaning "border," then "border country," "march" (German *mark*), and finally simply "country" as in the phrase "foreign countries." "Country," however, is too vague a term for a definite political area.

DISTRICT, *Uezd* (pronounced *U-yézd*): the ordinary subdivision of a Government, *Guberniya*.

CIRCUIT, *Okrug* (from the preposition *o* = round and *krug* = circle): originally having the same relation to *Oblast'* as *Uezd* had to *Guberniya*, but now apparently interchangeable with *Uezd*.

DIVISION, *Otdel* (pronounced *Atdyél*): formerly used instead of *Okrug* for a subdivision of an *Oblast'* in certain cases, as in the old Kuban Province. It has a distinctly military significance.

These are the main political areas. Smaller units, not usually shown on Russian maps, are:

Canton, *Volost':* an aggregation of villages, somewhat like our Hundred or Rural Deanery.

Region, *Raion* (from the French *rayon*): apparently the same, with a military implication, originally meaning a group of connected forts. It is also the word ordinarily used in such a phrase as "gold-bearing region."

The following abbreviations for the titles of autonomous or semi-autonomous areas appear to be in use in the Union of Socialist Soviet Republics (U.S.S.R.), *Soyuz Sotsialisticheskikh Sovetskikh Respublik* (*S.S.S.R.*).

S.S.R. = Socialist Soviet Republic, *Sotsialisticheskaya Sovetskaya Respublika.*

F. (inserted between the two Ss of the foregoing) = Federated, *Federativnaya.*

A. (sometimes before and sometimes after the distinctive name) = Autonomous, *Avtonomnaya* (often abbreviated *Avt.*).

P. (anglice) = Province, *Oblast'* (*O.*, but often abbreviated *Obl.*).

The distinctive name in the Russian form is either (i) an adjective with masculine ending *-ski* (to agree with *Krai*, *Uezd*, *Okrug*, *Otdel*, *Raion*) and feminine ending *-skaya* (to agree with *Respublika*, *Guberniya*, *Oblast'*, *Volost'*); or (ii.) a substantive in apposition in the nominative case, *e.g. Avtonomnaya Oblast' Ingushetiya.* In the translations here given an attempt has been made to use substantives only. The termination *-o* to the first part of a compound name is similar to the English usage in "Anglo-Egyptian," "Indo-China," etc.

Names which are pure Turkish words, as *Daghestan*, *Qarabagh*, *Qarachai*, are here transliterated as from Turkish, not as from Russian.

POLITICAL DIVISIONS OF TRANSCAUCASIA, S.F.S.R.

Zakavkazskaya, S.F.S.R.

AZERBAIJAN S.S.R.	*Azerbaidjanskaya S.S.R.*
Azerbaijan.	
Mountain Qarabagh A.P. ..	*A. O. Nagorni Karabakh.*
Nakhichevan Territory ..	*Nakhichevanski Krai.*
ARMENIA S.S.R.	*Armyanskaya S.S.R.* (or *S.S.R. Armeniya*).
GEORGIA S.S.R.	*Gruzinskaya S.S.R.* (or *S.S.R. Gruziya*).
East Georgia	*Vostochnaya Gruziya.*
West Georgia	*Zapadnaya Gruziya.*
Abkhazia S.S.R.	*Abkhazskaya S.S.R.* (or *S.S.R. Abkhaziya*).
Ajaria (or Ajaristan) A.S.S.R.	*A. Adjarskaya S.S.R.* (or *A.S.S.R. Adjaristan*).
Southern Ossetia A.P. ..	*Yujno-Osetinskaya A. O.* (or *A. O. Yugo-Osetiya*).

POLITICAL DIVISIONS ADJOINING TRANSCAUCASIA S.F.S.R. ON THE NORTH, BEING PART OF RUSSIA S.F.S.R. (FROM EAST TO WEST.)

DAGHESTAN A.S.S.R. ..	*A. Dagestanskaya S.S.R.*
CHECHNIA A.P.	*Chechenskaya A.O.* (Containing Grozni, town with provincial status.)
SUNJA CIRCUIT	*Sunjenski Okrug.* (A very small area not actually adjoining Transcaucasia S.F.S.R.)
INGUSHETIA A.P.	*A. O. Ingushetiya.* (Containing Vladikavkaz, town with provincial status.)
NORTHERN OSSETIA A.P.	*Severo-Osetinskaya A.O.*
KABARDA-BALKARIA A.P.	*Kabardino-Balkarskaya A.O.*
QARACHAI-CIRCASSIA A.P.	*A. Karachaevo-Cherkesskaya O.*
ADIGHE-CIRCASSIA A.P. ..	*A. Adigeisko-Cherkesskaya O.* (A very small area not actually adjoining Transcaucasia S.F.S.R.)
NORTHERN CAUCASUS TERRITORY	*Severo-Kavkazski Krai.*
Maikop Circuit	*Maikopski Okrug.*
Black Sea Circuit	*Chernomorski Okrug.*

(Several other circuits not adjoining Transcaucasia S.F.S.R.)

The foregoing note on the translation and transliteration of Russsian administrative terms and names has been thoroughly discussed with and revised by Mr. J. H. Reynolds, Secretary of the P.C.G.N., to whom my most grateful thanks are due. We hope that the result may serve a useful purpose in bringing a very tangled subject into provisional order for English use.

NOTE ON A MAP OF THE BRITISH ISLES BY PIETRO COPPO

Prof. Roberto Almagià

THE map of the British Isles here reproduced for the first time is a wood engraving, hitherto entirely unknown, of which the only copy discovered down to the present moment is preserved in the Municipal Library of Pirano, in Istria. Although it bears neither the name of its author nor a date, it is quite safe to say that it was the work of Pietro Coppo, probably about 1525.

Pietro Coppo or Copo is fairly well known as a geographer and

cartographer; born at Venice in 1469 or 1470, he nevertheless spent nearly the whole of his life at Isola, in Istria, where he followed the profession of notary (*notarius et judex ordinarius*), holding also other public offices. He certainly travelled over the whole of Istria by sea and by land, and knew the country perfectly; possibly he made other journeys also. He died at Isola at the end of 1555 or the beginning of 1556.* His best-known work is a "Portolano" of minute size, printed at Venice by Bindoni in 1528, which has now become extremely rare.† It has at the end a printed planisphere of characteristic design, reproduced in the 'Raccolta Colombiana,' and also in Nordenskiöld's 'Facsimile Atlas' (p. 103). Coppo afterwards wrote also a description of Istria ('Del sito de l'Istria'), printed at Venice in 1540, and accompanied by a map of that country, which, subsequently reproduced several times in good copper-plates, is to be found also in the so-called Lafreri Atlas; it is the best and most famous map of Istria of the sixteenth century.‡

But Coppo's most important work has remained unpublished to the present day. It is a description of the world in Latin, in four books, entitled 'De toto orbe,' or 'Cosmographia,' of great value for the history of geography in the sixteenth century. Of it the author himself composed a summary, with the title 'De Summa totius orbis.'

Of this work, or its summary, I at present know four manuscripts:

I. National Library at Paris, Fond. Lat. 9663. This contains the work 'De Toto Orbe,' divided into four books (fol. 1–202); then the 'Summa totius orbis' (fol. 204R.–242V.) and the Portolano, in a text agreeing with that printed at Venice; lastly, also an Italian version of the 'Summa totius orbis.'

II. Communal Library at Bologna, A 117. This MS., which contains the text of the 'De Toto Orbe,' has recently been described by C. Lucchesi, 'Inventario dei Manoscritti della Biblioteca Comunale di Bologna,' Series A (Florence, Olschki, 1924, p. 59).

III. St. Mark's Library at Venice, Cod. Lat. X. 146. This contains only the 'Summa totius orbis,' that is, the summary of the larger work.

IV. Municipal Library at Pirano. This MS. contains the 'Summa totius orbis' and the 'Portolano.'

The Paris and Venice MSS. contain no geographical maps. On the other hand, the Pirano MS. is accompanied by fifteen woodcut maps, and that at Bologna by twenty-two maps drawn and coloured by hand, which, taken together, constitute a really original modern atlas, worthy of detailed study, as would also be the text of the 'De toto orbe.' It includes a chart of the celestial spheres, two mappæmundi, nine maps

* On Coppo's life and writings, see Attilio Degrassi, "Di Pietro Coppo e delle sue opere," in *Archeografo Triestino*, III. Serie, vol. xi., 1923.

† I have seen only the copy preserved in St. Mark's Library at Venice. Another is to be found in the British Museum. See Harrisse, 'Bibliot. Americana vetustissima,' *sub anno* 1528.

‡ This description of Istria has been printed by Degrassi in the work quoted above.

of Europe (among them one of the British Isles), one of the New World, three of Africa, and six of Asia. The woodcut maps of the Pirano MS. correspond in part only to the hand-drawn maps of the Bologna codex: the map of the New World is missing, as also those of Africa, and there are only three of Asia. On the other hand, there are two special maps of Italy and one of Istria which are not in the Bologna codex. It is probable that the Pirano set is incomplete, and that some of the maps have been lost.

It must be noted besides that while the maps annexed to the Bologna MS. have neither signature nor date (the codex itself is undated) some of the Pirano maps have engraved the signature, or at least the initials, of the author, and some the date also. For instance, one planisphere bears along the upper margin the title: "Orbicularis totius terræ et maris figuratio impressa MDXXIV.," and at the bottom the signature "Petrus Coppus F." Similarly the map "Italia, Illyricum Epirus Gretia et Mare Egeum. Impressa MDXXIV." has the same signature. A map of the island of Candia has the indication "P.C.F. nel 1526," while the maps of Spain and France have only the initials of the author. Since all the maps are composed in the same style and on the same plan, we may confidently conclude that also the maps which lack the author's name (as does that of the British Isles) are nevertheless the work of Coppo and of the same period (1524–26).

The map of the British Isles in the Pirano Codex, here reproduced in facsimile, measures in the original about 35·3 × 26·5 cm. It is folded in two in the MS. and is somewhat damaged along the fold, as may be seen from the photograph. It is the third in the codex, coming immediately after the two planispheres. In the Bologna codex there is likewise a map of the British Isles (the fourth, following the planispheres and the star-map) very similar to the printed map as regards construction, orography, and hydrography; it has all the names in Latin, however, but the nomenclature is the same.

I do not propose to examine the contents of the map in detail here. It will be enough to observe that it combines two elements of diverse origin. The design of the coasts, with the many and deep bays, the river estuaries, the small islands and rocks, are certainly taken from a nautical chart. Other features too disclose a similar source: for example, the separation of England and Scotland by a narrow channel, which is met with in various nautical charts, especially of the fourteenth century (Atlante Mediceo, 1351; Pinelli-Walckenaer Portolano, 1384; Upsala Nautical Chart in Nordenskiöld's 'Periplus,' plate xix., etc.; also the great gulf filled with islands (Clew Bay) on the west coast of Ireland.* But the nautical chart used as a base is notably different from that followed either by Bernardo Silvano for his 'Britannia' of 1511, or by the author

* For this feature see T. J. Westropp, "Early Italian Maps of Ireland," in *Proc. R. Irish Acad.*, vol. 30, sect. C, No. 16, 1913.

of the ' Tabula Nova Hiberniæ Angliæ et Scotiæ,' which appeared in the Strasbourg Ptolemy of 1513.* As a whole, the picture of the outlines which we see in Coppo's map is inferior to that of either of the other two maps here mentioned.† The other element in the map consists of data derived from Ptolemy. From this source, for example, are taken many names of watercourses,‡ and also of the inhabited centres, especially in the interior; Ptolemy is recalled too by the names of peoples, which have retained the classical form, and by certain other indications, such as the " Caledonia Silva " in Scotland and the words " Victrice Legione " in the centre of England, a curious denomination which seems to derive from a faulty interpretation of a passage in Ptolemy (Book 2, chapter iii. §§ 10, 11), where mention is made of " Legio VI. victrix " and " Legio XX. victrix." But besides the Ptolemaic names there are also a few modern names of inhabited places, especially along the coasts of England and of Ireland. I hope that the complete study of the names in this interesting map may before long be made by another. He will, I think, be able to confirm the view that Coppo's map, like many other regional maps of the first half of the sixteenth century, is the result of a combination of ancient and modern elements—a combination which was not always a success. Bernardo Silvano in his map of 1511 reproduced Ptolemy's nomenclature pure and simple, restricting himself to correcting the outlines of the islands, especially on the base of the nautical charts. The ' Tabula Nova ' of the Strasbourg Ptolemy of 1513 introduces on the contrary a modern nomenclature, but only for the coasts, for it gives only a minimum of names in the interior. Coppo's map gives a much more extensive nomenclature, even for the interior, and may be therefore considered to occupy a position in the cartographical history of the British Isles intermediate between the map of 1513 and the famous map of Lily (1546), which is the most important document in the cartography of the Archipelago during the whole sixteenth century.

Note: We are indebted also to Professor Almagià for a list of the names, many of which are rather indistinct in the photograph. This list will be incorporated in the study of the place-names of this interesting map which has been promised us for early publication.—ED. *G.J.*

* For Silvano's map of Britannia see G. Guglielmi-Zazo, " Bernardo Silvano e la sua edizione della Geografia di Tolomeo " in the *Rivista Geogr. Italiana*, 1925, pp. 48–52. The Tabula Nova of the Strasbourg Ptolemy is reproduced in Nordenskiöld's Facsimile Atlas, p. 11.

† Coppo's design does not agree with any one of the three types which according to H. Inglis represent the most ancient versions of the picture of the British Isles (" Early Maps of Scotland and their Authors," in *Scottish Geog. Mag.*, 1918, pp. 217 *et seq.*).

‡ The trace of these in the interior is purely arbitrary, as is also the representation of the mountains.

The British Isles, from the wood engraving by I

ving by Pietro Coppo in the Municipal Library of Pirano, Istria

THE TUAREG

The People of the Veil: being an account of the habits, organization and history of the wandering Tuareg tribes which inhabit the mountains of Aïr or Asben in the Central Sahara.— **Francis Rennell Rodd.** London: Macmillan & Co., Ltd. 1926. 10 × 6½, pp. xvi. + 504. *Map and Illustrations.* 30*s. net.*

CONSIDERING that so much of it is not very far distant from Europe, the northern half of the continent of Africa has not received the attention it deserves from ethnologists, if we except the Nile Valley and some portions of the North African seaboard. Detailed studies of the races of Northern Africa have remained scanty because access to the Sudan was, until recently, attended by hardships and difficulties, and because the major portion of the northern half of the continent is of such a sterile and waterless nature, that the most ordinary comforts of travel can only be obtained by organized expeditions. The ethnological problems involved are however probably second to none in interest. The sidelights which have been thrown upon the Sahara and Sudan in past ages have come from such different angles of vision that the task of general survey is a difficult one, demanding on the part of the surveyor an all-round knowledge of ancient, mediæval, and oriental history, coupled with a present-day knowledge of the different parts of the whole, which is difficult to find combined in any one savant or ethnologist. The problem, however, is in many respects one and indivisible.

Northern Africa is a stretch of the Earth's surface with few geographical barriers. Races have roamed its deserts in all directions: tribes have fused with tribes, and the cultures of the north and east have, usually in an attenuated form, spread consistently southwards and westwards towards the equator. Thus the faces of the peoples of the Sudan and Sahara have been always set towards the north and east, their cultural home of origin. The line of the equator on the other hand was, so to speak, a blank wall, and what was beyond it unknown to them.

Perhaps the greatest service which Mr. Francis Rodd's book renders to students of the history and ethnology of Africa is that he is the first to set forth in one very readable volume both the magnitude of the problem and its complexity, while delineating vividly the romantic side of the life of the people to whom the work mainly relates. He includes a description of one portion of their country, the region of Aïr and Damargu, portrayed with freshness and enthusiasm.

The "People of the Veil," commonly called Tuareg, are a race or caste of nobility who, at any rate since 500 A.D., have roamed and ruled the Sahara. They are white in skin colour, of magnificent physique, and have, as no other African people has, the traditions and bearing of an aristocracy. They count descent through their mothers, and inheritance passes through females, who are socially the equals, if not superiors, of the men, and are unveiled; while, on reaching manhood, in the full sense of the term, every noble male wears for the rest of his life by day and night a "vizor" of cloth (the so-called veil) which covers his face except for a narrow slit through which he is able to see.

The interesting question with which Mr. Rodd's book largely deals, is who are these Saharan nobles, Imajegh or Imoshek as they call themselves in their own language (Tamashek), and whence did their peculiar dress, customs, and social order come? These are difficult questions, and can only be briefly touched upon here. For further details, reference may be made to Mr. Rodd's

paper in the *Journal* for January 1926, and to the writer's notes in the *Journal*, November 1926, pp. 412–18.

In chapter iv. he describes and discusses the social organization of the Tuareg into two or, as is more often stated, three classes. These are the nobles, imajegh, and the servile tribes, imghad. They, with the slaves proper, ikli, who in the main are negroes, make up the nation.

Though the age-long propinquity of Egypt may account for much in the present-day Tuareg social order, and North African and Syrian influences which are emphasized by the Arab historian Ibn Khaldun, may account for much more, these influences do not seem to account either for the physical type of the Tuareg and their ritual veil, nor yet wholly for what may be termed their "chivalry," though the word must be understood in connection with them to connote ideas other than those the term connotes in Europe.

We can trace, as Mr. Rodd does, the present Tuareg nobles of Aïr and the Upper Niger region to a habitat in the Azger plateau and in Fezzan about the opening of the Moslem era, but there is no reliable evidence that these same races, whatever may be said about some aspects of their culture, extended farther west before that era, or in fact that they lived in Fezzan before the end of the first half of the first millennium A.D.

In this connection the names by which tribal units are known now, or were known in past ages, are a very uncertain guide or indication of continuous ethnical homogeneity, and one is inclined to think that Mr. Rodd builds too much on supposed continuity of tribal composition as indicated by similarity of names. For instance, such names as Ifuraces, Ifoghas, Ifrikish, etc., are merely, it is thought, variants of the common noun "Bar," "man," which makes plurals Barak, Burâk, Bar-ku, etc.

If we go back to the opening of the Christian era, we find in the Eastern Sudan a people of whom the Greek and Roman classical authors wrote very much as Mr. Rodd writes of the Tuareg. They were pre-eminently an aristocracy, and such epithets as ὑψιγύνοι and σκηπτούχοι are applied to them by the Greek authors. Romances were written about them by Latin writers, and they were so remarkable in appearance that they attracted the curious gaze of a Roman audience at a Triumph. Their name to the Romans sounded Blemyes or Balhemu, the equivalent according to Dozy of the Arab geographer Idrisi's Al Beliun, *i.e.* Beli or Berbers of Ennedi and Wadai. Since from these same Beli and their allied race the Zaghawa (whom Ibn Khaldun labels as "people of the veil") came the Berber rulers of Kanem (Kanuri), whom the modern Tuareg still call Izaghan (sing. Izghi)—which is simply another form used to denote Zaghawa in contrast to the Ikaradan (Gara races or Garawan, ancient Garamantes)—it would seem that there is a very fair *prima facie* reason for believing that the Blemyes, Beli, Izgham (Zaghawa), and Muleththemin (Tuareg) are or were racially much the same and derived their distinctive culture from the same source.

It is at least a possible hypothesis that the "veil" and the Christian symbols which the Tuareg use came from the Nile Valley or east of it, while, on the other hand, other parts of their culture were derived from their predecessors or the Libyans of North Africa, with whom they perhaps fused in Fezzan after their expulsion from the Nile Valley when crushingly defeated by the Romans and Silco King of the Nobatac between 400–500 A.D. A notice in Evagrius concerning Blemyes and Maxyes (Imajegh) in the oases west of Egypt about 400 A.D. rather suggests that such was the case.

Mr. Rodd touches briefly on the vexed question of the date of the intro-

duction of camels into the Sahara, and has some interesting remarks on Tuareg architecture. Concerning the "argem" type of tomb of the Tuareg, which also occurs farther north, he records Gsell's view that they are fairly late in date.

Perhaps the most interesting chapter in the book is chapter ix. on "Religions and Beliefs." Mr. Rodd writes: "There is no doubt that underlying all their Islamic practices they hold fundamental beliefs drawn from their earlier religious practices, regarding which only very few indications are available. Duveyrier and other authorities assert that the Tuareg were Christian before they were converted to Islam, and I am prepared to accept this view in spite of the denials which have been expressed by so eminent a writer as Bates." May not the solution be that Bates was chiefly concerned with the Libyans proper of North Africa, whereas the Christian influence observable among the Tuareg may have come from the Upper Nile and not from North Africa? It seems to the writer that Mr. Rodd possibly attaches insufficient weight to Bates' conclusions as to the early religious beliefs of the Saharan Berbers. He does not mention the various notices in Arab authors which show that from 500 A.D. onwards to 1000 and longer, the Berbers east of the Tibesti range were, first, worshippers of the sun, moon, and stars; and then in some measure followers of the Christian Jacobite heresy from the time of the Empress Theodora.

The most common Tuareg cross (illustrated on p. 276) is not unlike the Egyptian ankh sign, and it is significant that just as the Tuareg men wear the "veil" day and night, so a Tuareg woman will not willingly take off this particular form of cross, though the ordinary Latin cross is treated as a mere ornament. On the other hand, the "talhakim" triangle mentioned on page 282 seems rather to be due to Phœnician or possibly Cretan influence.

Concerning the "veil" Mr. Rodd truly says, "The veil will be found wherever the Tuareg live, and only when the riddle of their origin is solved will an explanation be forthcoming. Since the veil is sometimes not donned until the mature age of 25 years and in no case is it worn until several years have elapsed after the sword is first worn, its ritual origin cannot be doubted." Nor, it may be added, is there any doubt that the proper and original ritual of the nobles demanded a black or indigo veil—not a white one. In this connection the references in Idrisi's geography to the Al Beliun, whom Dozy rightly holds to be the people called by the ancients Blemyes, is illuminating. Idrisi speaks of Nubia being subject to the *rhazzias* of "Kheil al Sudan, called Al Beliun." Dozy translates these words "black horsemen," but, in the first place, if such was the meaning nothing would have been easier than to express it grammatically, and secondly, the word "Kheil" in the Sudan has usually almost the same meaning as such words as "Knights" or "Chivalry" had in the Middle Ages. The expression "Kheil al Sudan" should mean the "chivalry of the Sudan," and may well include fighters not only on horses but on camels. Sudan may also possibly connote the "black veil" of the raiders, but it can hardly denote the skin colour of the riders.

Hitherto no one has been able to connect the "Tuareg veil" with the ritual of any people ancient or modern of the temperate zone, nor as Mr. Rodd states, is there any mention of it at all before the Arab epoch. On the other hand, the conceptions by Roman geographers of fabulous Blemyes, to whom were cognate the historical Blemyes of the Nile Valley, may well have had their origin in the unique costume of the "people of the veil." To the writer it seems that the most promising field for investigation in this regard lies in the superstitious awe the southern Tuareg feel for trees of the species of "Myrrh"

and "Acacia," to which they apply the epithet "blessed," and from which unsophisticated individuals regard themselves in some cases as descended.

This train of thought suggests the eastern horn of Africa and Arabia Felix as the home of the "veil." Considering that Ibn Khaldun believed that these regions were at least the nearer home of the Muleththemin, the hypothesis is worth examination.

On pp. 322 *sqq.* Mr. Rodd discusses the position of the region called by the Romans Agisymba, which has from the time of Duveyrier onwards been thought to denote the Aïr plateau. His arguments in favour of its having been more probably the Tibesti region are weighty, and to them it may be added that the latter part of the word resembles the ordinary Teda word for people, "amba," while, though the word "agus" is now the South Tuareg term for south, it is not at all impossible that it was used in the Garama of the Roman era by the town Garamantes to denote "South." If so, Agus-amba (Agisymba), "south people," would naturally be Tibesti.

It is most probable that "Garama polis," or Jerma, contained a composite commercial population of northern races like all the Saharan entrepôts. The Garamantes of the country were probably quite different people, in fact the ancestors of the modern Teda or Tubu. Mr. Rodd, however, is probably not on sure ground in regarding the place-names Bardetus and Mesche as denoting country occupied by Teda (Tubu) or the Bardoa of Leo Africanus as referring to these same races. The Roman names assigned to mountains in the Agisymba region, Bardetus, Mesche, and Zipta, are more consonant with a Berber if not Tuareg occupation of the southern regions in question than anything else, for while Bardetus or Bardai connotes an area of Berbers, Mesche would appear cognate to such place-names as Damasek, Museku, Tamiske, Amsaka, etc., which are all derived from the Berber -sek or sagh, an "encampment."

There is no reason to doubt Mr. Rodd's inference from a passage in Corippus that John, the Armenian general of Belesarius (*circa* 533 A.D.), fought against the ancestors of the modern Tuareg, but the Circumcelliones, who embraced the Donatist heresy in 345 A.D., may have been any Berbers. To the writer at least it appears very doubtful whether there were any considerable number of Tuareg in Fezzan before the fifth century A.D. It would seem, in fact, as if the Libyans first penetrated the Sahara, and that it was the Lamta (Illam or Blemyes) who absorbed them into Tuareg.

'The People of the Veil' is excellently illustrated, and its concluding chapters are full of information, albeit some of that given about the tribal units can hardly be regarded as sufficiently certain to be accepted as a basis for final pronouncements on the history of the various groups of the present day, or their history in the past. We have still much to learn about these desert peoples, and much to verify, if not correct; but Mr. Rodd's work, full as it is of insight and sympathy, goes to the heart of these problems. If his details are not all above question, he gives a complete and living picture of the Tuareg and their country which will appeal to the imagination of all who are interested in Africa.

H. R. PALMER.

SUMATRA

Terres et Peuples de Sumatra.— Octave J. A. Collet. Amsterdam: Société d'édition "Elsevier." 1925. 11½ × 9, pp. xvi. + 562. *Maps and Illustrations. Belgian francs* 110.

THIS handsome quarto of 530 pages is lavishly illustrated by 150 maps, text-figures, graphs, and charming head-and-tail pieces appropriate to the subject of each chapter, as well as enriched by 180 full (mostly double) page plates from photographs of unusual excellence, in addition to a large coloured map on the scale of 1/2,000,000. The book has a bibliography and a good index. The work, written in a clear and attractive style, gained for its author in 1924 (on its first award) the triennial prize "Maurice Rahir" of the Royal Belgian Geographical Society. It possesses, however, two defects: one, that in being heavy, 2½ inches thick, and bound in very flexible art-linen covers (also aptly ornamented with Sumatran *motifs*) it annoys one, unless read on a table, by constantly falling all of a heap in the using; the other, serious from a historian's point of view, is that the author throughout the book nowhere quotes his authorities, leaving the reader in doubt whether his information, occasionally questionable, is from personal knowledge, or from whom, if any, of the authors cited in his extensive, though incomplete, bibliography it is derived.

M. Collet's object has been to produce a monograph, condensing into his pages all the economic, social, family, and industrial life of the people, and to indicate what the Netherlands' domination has done to justify its conquest and colonization of the island. Apart from Marsden's 'History of Sumatra' (1783), Prof. Veth's monograph (1873), and Lekkerkerker's 'Land und Volk von Sumatra,' he claims, and with much justice, that no similar work exists.

The eighteen chapters of the volume fall into two parts: nine of them deal with "Le Milieu"; "L'Ambiance"; "Les Populations"; and nine others describe "Les Régions" into which Sumatra is divided for administrative purposes. The book might have been abbreviated had the second part not repeated much that has been given in the earlier chapters.

Physical Features.—Under "Le Milieu" are discussed "L'insularité"; "Le Sol"; "La Vie."

Sumatra, the second largest member (if New Guinea be excluded) of the East Indian Archipelago, sits astride the equator between 93° and 106° E. longitude, having on its east the Straits of Malacca and the Java Sea; and on its west the Mentawi abyss—15,000 feet deep—of the Indian Ocean. The island occupies the western cornice of the extensive submarine plateau, which, out as far as the Philippines, once formed part of the Asiatic mainland. Its conformation is striking. Along its western verge runs throughout its length a continuous, in some parts double, chain, the Barisan range, with summits reaching 12,000 to 13,000 feet—a range traceable northward through the Andamans, Nicobars, and Assam to the Himalaya spurs, and southward into Java.

Two orogenic factors are observable in Sumatra: that due to the enormous subsidence of the Asiatic continent responsible for the uplift of the Barisan, and that of the zones of fracture due to violent tectonic action which contributed to amplify the long depressions which furrow the length of the island. Atjeh and the Gayo lands form an ancient horst, 7000 feet high, of archæan rocks, cropping out of much-denuded Tertiary sediments. The Batak plateau (the southern part of this bastion) has been the centre of intense volcanic

outbursts. The oldest determined fossils are of Upper Carboniferous age. During the Mesozoic the island was, probably totally, submerged. In mid-Sumatra the fossil-bearing marly schists are ascribed to the Upper Cretaceous. The Ombilin coal-measures, in the Padang Highlands, are Eocene. The last uplift at the end of the Miocene was accompanied by renewed vulcanicity whose ejections overlie the previous formations, and have delineated the present morphology of Sumatra. South of 2° of south latitude, the sedimentary rocks are of late Tertiary age, at the close of which Sumatra became entirely insular. The gradual abatement of the terrestrial convulsions, which lasted far into the Quaternary, was attended by greatly increased precipitation, producing torrential rivers and intensified outflow of the lakes, whose action while softening the lineaments of the land created the vast alluvial plains which cover two-thirds of the coasts of Sumatra. Wonderful vistas are to be obtained from the mountain peaks, and landscapes of great beauty are met with throughout, especially in the highlands of the north and north central districts, where an alpine flora occurs.

The soil, a compact of humus and disintegrated lava, acted on by an abundant rainfall (an average of from 80 to 118 inches annually) with sea breezes modifying the equatorial heat, is extremely fertile. The island therefore throbs with life, and is clothed with a very dense and diverse mantle of vegetation. Biologically, it is in closer agreement with the Malay Peninsula and Borneo than with Java. Its immense virgin resources are however but little explored. Hundreds of plant species are still unknown to the botanist. Its great woods harbour noble arboreal giants of high economic value; they are rich in luscious fruits and contain some of the most striking and bizzare products of the vegetable world; their wealth in ferns, orchids, and aquatic plants in the river backwaters, is past reckoning. The fauna of Sumatra equals its flora in richness. The island is a paradise for the naturalist and sportsman. Tiger, leopard, elephant, rhinoceros, tapir, wild boar, mountain goat, and well-antlered deer are to be had without great searching. The flora and fauna of north Sumatra seem to differ from those south of the equator. The *Pinus Merkusii* (recalling the deodar of the Himalayas) is endemic to these highlands, while the orang-utan, the wild goat, and other species have not been met with in Southern Sumatra.

Historical and Economic.—Under " L'Ambiance," chapters are devoted to " L'Histoire "; " La Domination "; " L'Economie."

The indigenes of Sumatra have no traditions, and no pre-Hindu monuments. The Chinese and Arab adventurers were acquainted commercially with the island before it came to the knowledge of the western world, and that through the trade in almost one unattractive commodity—the pepper of everyday use. The keen competition for this spice instituted a cycle of great geographical discovery and commercial activities, in which the Portuguese, Dutch, and English in turn took part. Their rivalries are traced by M. Collet through the troublous centuries till the restoration of Java by the English, and later the exchange of Bencoolen for Malacca and the end of the forty years' war with Atjeh, at last brought Sumatra under almost complete Dutch dominion. Coincident with the hoisting of our flag at Batavia in 1811 a new Sultan of Palembang (between whose predecessors and the Dutch there had existed for 180 years a treaty of peace and commerce) suddenly inaugurated his defection by the massacre of the whole of the factory officials and the Javanese garrison. With regard to this deplorable incident M. Collet has not hesitated to bring the gravest allegations against Sir Stamford Raffles—whom he recognizes in

one passage as "le grand homme d'Etat Colonial." It is fair we should quote his own words: "Il ne saurait y avoir de doute serieux à ce sujet, à la instigation des Anglais les Hollandais dans la ville furent massacrés" (p. 90), and again (p. 458): "Les incitations de Raffles . . . dont la politique donna souvent lieu à de suspicions, ne furent peut-être pas étrangers à l'affreux massacre dont tous les Européens de Palembang furent victimes le 14 septembre 1811." It ought to be noted that on that date four days only had elapsed since Raffles' landing in Batavia with Lord Minto. For these calumnies M. Collet ought in justice to have stated his authority. Sir Stamford's 'Life,' which is not even included in the author's bibliography, should have been sufficient, if he had ever read it, to prevent his publishing such an outrageous suggestion against so upright an administrator, whose friendship for the natives is a matter of history. As the present writer has elsewhere narrated, Raffles' memory was held in the warmest regard sixty years after his death by the descendants of the native officers who served under him.

Sumatra has now been brought almost entirely under Dutch domination. The key to their successful political supremacy, M. Collet claims, has been their scrupulous respect —only, it should be added, *after* the rendition by the English—for the beliefs and customs of the indigenes to whom it has brought widely distributed prosperity. Previously they lived at the mercy of the sultans and lesser rulers whose pleasure conditioned the law. Courts of Justice under European judges have been instituted; piracy, slave raiding, as well as domestic slavery, have been abolished. Schools, hospitals, compulsory vaccination, and schemes for their social progress have been widely inaugurated.

As soon as Holland abandoned her exclusiveness in the second half of the nineteenth century and threw open her Indian possessions to European colonization the economic prosperity of Sumatra began to advance with extraordinary rapidity, chiefly due to the establishment of plantations and the discovery of petroleum. In 1921 her total exports reached the figure of some 18¼ millions sterling against imports of less than 13 millions. Minerals and petroleum produced 4 millions; plantations (rubber, coffee, tea, palm-oil—in which Sumatra now competes with West Africa), close on 3 millions; while quinine and tobacco figure at 6¾ millions sterling.

Ethnological.—Under the heading of "Les Populations," the third section treats of "La Démographie"; "Les Hommes"; "Les Sociétés."

The first of these discusses the somatic and physiological characters and the psychological peculiarities of the indigenes and their diverse reactions to their environment—geographical and political. The mean distribution and density of the population, which is only fourteen to the square kilometre (owing to epidemics of malaria and small-pox, now diminishing through the influence of education and the establishment of hospitals), contrast unfavourably with the 266 to the same area in Java.

Racially the people, with the exception of the Atjehnese, the Gayos, and the islanders of the west coast, are Malays showing as a whole great uniformity of type. M. Collet analyses their peculiar psychology (leading to *amok* among the men and *latah* among the women); their family, social, and ceremonial life; their advanced architectural art; their literary abilities and their script.

The final chapter of this part considers the associations and tribal institutions of the indigenes; their totemism, transmigration ideas, fetishism, and phallic cults; organization of their clans; the result of the superposition of Islamic laws upon their pagan customs and creeds; and the changes in their

genealogical and terrestrial communities following upon the Government's assumption of sole ownership of the soil.

Regional.—The second sheaf of nine chapters treats of the Regions into which Sumatra is divided for administrative purposes. Each is reviewed in succession from north to south in its geological, ethnographical, racial, and geographical bearings and its relations to the dominant power. The entire section, running to 257 pages, can be reviewed only in the merest outline in the space at our disposal. It opens with a chapter on " La Forêt et les Sylvicoles," where administrative laws hardly run, peopled only by herds of savage animals and nomad hordes. Of the latter M. Collet gives us an account of (among others) the Koeboes, probably the most primitive of surviving tribes—a remarkable and arresting picture (to whose truth the present writer can testify) of a human community living amid countless enemies, with the forest shade their sole shelter and its natural products their only subsistence, yet holding their own from time immemorial in so low a state of existence as to have never discovered how to shape even the rudest stone as an implement or a weapon—a truly pre-palæolithic stage of humanity.

M. Collet begins his detailed survey with the *Government of Atjeh and its dependencies;* its coastal Radjahliks, and the Gayo and Alas peoples of its central horst, who, having lived isolated till the beginning of the twentieth century, preserving their language and institutions intact, offer a rich harvest to some fortunate anthropological explorer; he goes on to the *Tapanoeli Residency*, its capital, Sibolga, planted in one of the most beautiful and capacious harbours of Sumatra; and the proto-Malayan Bataks living around the immense Toba lake. An excellent account of these people was given by Baron v. Huegel in his review of Baron von Brenner's 'Besuch bei den Kannibalen von Sumatras' in the *Journal* for January and February 1896. Although M. Collet does not include the book in his bibliography, it is evident that this chapter owes much to von Brenner's observations. Under the *Government of the East Coast* the author passes in review its famous " Aire de Culture," whose propserity is largely due to its tobacco plantations; then passing to the *West Coast Residency*, facing the Indian Ocean he gives a history of the Padang Highlands, the most densely populated and the most advanced region of the island, whose inhabitants are noted for their artistic architectural skill, their industrial efficiency, and the beauty of their women; and of the ancient kingdom of Menangkabau within the same province, whose ethnographical and ethnological story forms one of the most interesting of the book. Neighbour to it lies *Bencoolen*, a mere ribbon of land between the sea and the range, a colony of fisherfolk, but of special interest to Englishmen, because of Sir Stamford Raffles' Lieutenant-Governorship at Fort Marlborough, where he had lived in high hopes of its becoming the centre of extended British possessions in the Archipelago. Recrossing to the eastern coast, M. Collet devotes many pages to the important provinces of *Djambi* and *Palembang*, especially to the latter, and to the famous Royal Dutch Petroleum wells near Palembang, its capital, from which the province takes its name; to the town itself, one of the most picturesque and bizzare to be found anywhere, with the wide Moesi river for its main street, flowing between long lines of floating habitations, rising and falling with every tide. Finally, guiding us to the southernmost province of *Les Districts Lampong*, M. Collet tells us of its singular population with affinities to the Bataks; of the Lampongers' prodigious vanity for titles (pangkat) and decorations; of its rich pepper gardens, far eclipsing those of

Atjeh which were long supreme, and exporting, in 1919, 1½ millions' worth—an extraordinary sum considering the small amount of this spice annually consumed per individual in the world. Before quitting the province we may quote once again from our author for the delectation of the reader: "In the beginning of the 19th century this province knew a ruler—a sort of national hero now the subject of popular legends—whose achievements were only those of a brigand more fortunate than his rivals . . . the indefatigable Raffles . . . !"

The volume concludes with a lengthy historical and ethnographical account of the islands of the west coast archipelago, the chief of which are Nias, the Mentawi Group, Engano, and their satellites.

M. Collet's monograph is a very accurate and welcome contribution to our fuller knowledge of this most beautiful island of the Malay Archipelago, and one it would be difficult to outrival anywhere.

HENRY O. FORBES.

THE SURVEY OF INDIA IN THE GREAT WAR

Records of the Survey of India, Vol. XX.: The War Record, 1914–1920. Dehra Dun: Survey of India. 1925. 10 × 6½, pp. xxv. + 155. *Illustrations and Five Maps in Pocket.* 5*s.* 3*d.*

THE survey problem during the Great War on the Western Front was mainly one of accurate mapping on a comparatively large scale within a limited area; of the constant revision of trench and other detail; and of printing and supplying large quantities of maps. The problem in the Eastern theatre, with which this volume deals, was in many ways less intensive, and more extensive. The scale of the maps produced was as a rule considerably smaller, as was the number of troops to be supplied; on the other hand, the area over which survey was carried was very much larger. Mesopotamia, Kurdistan, Macedonia, Arabia, Persia, Afghanistan, Palestine, East Africa—in all these areas detachments of officers of the Survey of India worked; and the mere recital of these names makes one realize the extent of our far-flung battle line.

The total area mapped on the half-inch or larger scales during the six years with which this record deals, was 180,000 square miles, or about twice the area of Great Britain. This was serious mapping, based on triangulation, and additional to very large areas which were reconnoitred or traversed. The total area of which more or less reliable geographical knowledge was obtained was comparable to that of Europe. This is a most remarkable achievement, and one of which the Survey of India has every reason to be proud.

The volume opens with a preface by the present Surveyor-General, Colonel Commandant E. A. Tandy; and after an introduction by the editor, includes three Parts, dealing respectively with Mesopotamia, Persia, and miscellaneous theatres.

In the Eastern theatre there was no distinct division between war and peace. Hardly had the war proper ended when the Kurdish rebellion broke out, then came the Arab rising, followed by the Afghan War. Hence the record covers the period 1914 to 1919, during most of which time a state of war existed.

The problem in Mesopotamia, dealt with in Part I., was the most serious and difficult with which the Survey had to deal. The Survey organization was from the first mainly under Colonel Pirrie, I.A., his small party of two Indian surveyors developing, after the capture of Baghdad, in 1917, into a Directorate including eighteen British and Indian officers and thirty-two other

ranks. In 1916 a Compilation Section, which was under the General Staff and independent of Colonel Pirrie's command, was organized by Major Gunter to deal with the mapping of forward areas, chiefly by means of air photographs. The work of this section was invaluable, and, as the Record says, it "laid the foundations of success."

Survey in Mesopotamia, and operations generally, were governed almost entirely by the physical fact of the two rivers, the sole lines of advance and retirement. Surveyors were not allowed to leave the river without escorts, which could not always be supplied. This led to serious difficulties on occasions, particularly when the army advanced to Kut. It was all-important that maps should be made of all the accessible country while this was possible, and Colonel Pirrie made every effort to do so. Unfortunately, the Army Commander was unable to provide the necessary escorts. The result was that, later, during the attempts to relieve Kut, no reliable maps were available; and for this the Survey of India was rather unfairly blamed.

After the Armistice survey work was pushed on energetically. There is a graphic account of the rapid reconnaissances carried out in Kurdistan by Major Mason and Khan Bahadur Sher Jang. These proved invaluable later when the Kurdish rebellion took place. A remarkable piece of work was also done by Captain Lewis, who in sixteen days carried a triangulation and ¼-inch topographical sketch over 200 miles of country, connecting with the Egyptian work at Aleppo.

In Persia (Part II.) rapid surveys were carried out over large areas. Adventure of every kind was met. A characteristic British achievement was that of Captain Perry, attached to a mutinous Russian army, and carrying on his surveys with the aid of local escorts arranged by the British Consul at Kermanshah. At the other end of the scale comes Major Rich's enlistment at Tiflis of Russian ladies as "Draftsmen." In East Persia a party under Colonel Crosthwait carried out an extensive survey.

In Macedonia (Part III.) the survey problem was more on the lines of that in France, with a stabilized front line. In December 1916 Major Wood took charge, and reorganized the triangulation. Early in 1918 the 8th Field Survey Company was formed, with two Sound Ranging and one Flash Spotting Section. The rest of this Part deals with work in Palestine, East Africa, and the N.W. Frontier. The Record contains much other interesting matter to which it is impossible to refer here.

The editing has been done by Major Mason, and he has produced a most readable volume, lightened by touches of humour such as are too seldom found in official histories. As instances of this may be given the account (p. 13) of the delight of the British Army at the "discovery" of the cities of Sodom and Gomorrah, and (p. 81) the means adopted to ensure rapid progress among Major Rich's drawing staff. They were told that if they did not become efficient tracers in a week they would be dismissed. It is recorded that their progress was "marvellous": a result which may give food for thought to those who employ draftsmen at home.

Instances of gallantry and devotion to duty on the part of the Indian Surveyors are numerous. Particular mention must be made of the combined geographical and political mission of Khan Bahadur Sher Jang through Central Kurdistan, already briefly referred to above. This able officer, after a very difficult journey, during which he carried out a route survey, met the Kurdish Chief Sayyid Taha and succeeded in persuading him, after a night of argument, to come to the British Station at Ruwandiz.

At the beginning of the Record are photographs of the British officers of the Survey who lost their lives in the War, and personal notes on each are given at the end. The volume contains five maps in a pocket, and four sketch-maps in the text, as well as a number of illustrations from photographs. There are four appendices, a personal index, and a general index. The volume is well got up and the printing is excellent. E. M. J.

DR. HUNTINGTON ON HUMAN GEOGRAPHY: REVIEW

The Pulse of Progress, including a Sketch of Jewish History.— Ellsworth Huntington. With a chapter on Climatic Changes by **G. C. Simpson.** London and New York: Charles Scribner's Sons. 1926. 9½ × 6, pp. xii. + 342. 21*s.*

IN this volume Dr. Huntington once more exhibits the diligence, originality, courage, and enthusiasm which have made his earlier works a delight to the general reader and a stinging stimulus to the critical faculties of the geographer. 'The Pulse of Progress' re-states many of the author's somewhat speculative hypotheses as to the changes in physical environment and their ecological influence, especially with regard to human history. It naturally bristles with points which challenge detailed criticism, but as far as possible we will try to avoid these by dealing with the wider aspects of the hypotheses used in the search for a geographical theory.

Three motives induced Dr. Huntington to write this book: (1) the demand for a clear and interesting popular statement of scientific conclusions in non-technical language; (2) the opinion that his views as to man and environment, originally elaborated in a dozen volumes, should be brought into the compass of one; and (3) the hope that a sketch in which account is taken of "recent advances in our knowledge of human geography, ethnography, economics, sociology, and biology" may prepare the way for a real history of human progress. He has certainly succeeded as to the first two points, and as to the third he has at least shown himself to be a serious man of science anxious to sift evidence and ready to modify his theories to fit new facts as they emerge. He is trying to break a way through a tangled forest, and he does not attempt to ride any hobby of his own rough-shod over other men's gardens.

The measurement of the breadth of the annual rings in the giant trees of California, some of which are 4000 years old, enabled Dr. Huntington, with certain assumptions, to construct a curve of climatic variation for a very long portion of the historic period. An instance of the response of vegetation to climate which is too recent for him to refer to leads us to place confidence in his results. This is the confirmation of the early meteorological records at Greenwich Observatory (which had long been suspected of inaccuracy) by the discovery of an old phenological record in Norfolk in which the seasonal curve of the blooming of plants in the early part of the nineteenth century exactly reproduced the variations of the Greenwich thermometer which had seemed too erratic to be true.* It is also recognized as a definite result of recent meteorological research that the weather in widely separated parts of the world shows a distinct though not always a direct mutual relationship.

* Note by Dr. Simpson on I. D. Margary's "Marsham Phenological Record." *Q.J.R. Met. Soc.*, **52** (1926), p. 52.

We fear, however, that Dr. Huntington's claim that the Mediterranean area has experienced changes similar to and synchronous with those of California will be hard to prove. He is wise enough not to press unduly the possibility of changes in Californian climate giving a date to prehistoric events in the ancient world, and the fact that the chapter on Climatic Changes is contributed by so orthodox and cautious a meteorologist as Dr. G. C. Simpson shows that Dr. Huntington prefers a balanced judgment to a partisan statement of the views he would like to see confirmed.

The purpose of the book is to give a clear statement of the action of environment on the temperament of individuals in particular and on the inherited and acquired character of races in general. Taking the broad ground that human nature is now as it was in the beginning of history, the author studies the influence of environment on temperamental types in the United States on the basis of the immensely detailed Census figures for classes of people and the much looser data contained in 'Who's Who in America' for individuals. The result is a fascinating picture of modern migration within the United States, showing how people of different temperaments, as indicated by their occupations or recreations, are sorted out and regrouped in other settings. The handicap of poor land is strikingly demonstrated by statistics which suggest that however much at random the population is thrown on the land, after a few years the better farmers come into possession of the best lands and the poorer lands come inevitably into the occupation of the worst farmers. The contrast between the sedentary agriculturist and the wandering nomad is adumbrated in the American statistics and admirably set forth by reference to the people of the desert margins studied by Dr. Huntington in the Old World. While poor farm land stunts the development of the farmer whose character is weak enough to allow him to remain on it, the austerity of desert conditions stimulates and disciplines the nomad who has the pluck to endure it, and kills off the rest.

The sifting power of cities is treated with remarkable effect. The author shows how temperament rather than race is the cause of the assembling of the various classes of the population in villages, towns, and cities as well as in countries. Cities are viewed as tools by which civilization is advanced, the more enterprising, the more cultured, and the more fastidious people being drawn in from country districts with a force increasing as the city grows; but the lower birth-rate and the higher death-rate of cities make constant recruitment from outside a condition of stability.

Nearly one-third of the work is devoted to a study of the origin, development and dispersal of the Jewish people. In this the author treats the Biblical narrative as history interpreted by ordinary historical methods, and this is certainly the most interesting part of the book, applying as it does the principles elaborated in the earlier chapters to a particular case which is not only the best-known but the most remarkable instance of the survival of a race moulded by the environment of a region which it occupied for a relatively short period. Perhaps the best chapter in the book is the fourteenth, entitled "The Isolation of Judea," in which a method of study familiar to British readers from the writings of such geographically minded Biblical scholars as the late Dr. William Miller of Madras and Sir George Adam Smith (neither of whom, by the way, is referred to) is used anew in an impressive manner.

While few geographers are likely to accept Dr Huntington's theories in full as they are set forth, all must agree that they form a fine framework on which to display the facts and relationships dealt with in Geography with a

coherence that cannot fail to attract and instruct the general reader, while the specialist will find himself put on his mettle to furnish a better system of his science.

There is a full and serviceable index.

HUGH ROBERT MILL.

REVIEWS

EUROPE

Agricola's Road into Scotland.— Jessie Mothersole. London: John Lane. 1927. 7½ × 5, pp. xxiv. + 260. *Map and Illustrations.* 10*s.* 6*d. net.*

ONCE more we are indebted to Miss Mothersole for a pleasant archæological and topographical book. Actually traversing the route on foot or on bicycle, she has described the course of Dere Street (called Leeming Lane in its southern stretch) from York to Newstead on Tweed. She has a sound instinct for the essentials in archæology, and a light human touch in description; moreover, her pictures with brush and pen are in the best sense illustrative. Here we have six coloured plates, seventeen in black and white, fifty sketches and plans in the text, and an adequate map of the general line of the Roman road. At the end is a useful table giving the Roman sites on the road, the legions and auxiliaries who held them, the dates of excavation, English mileage between them, and other information. The general reader with a taste for archæology will certainly enjoy a perusal of her pages, and will be equipped against the day when he can follow her steps and enjoy the mild adventures of following a Roman road for some 140 miles. With imperturbable good temper she takes her vicissitudes of wet and dry, rough and smooth, open and fenced: "Roman roads," as she writes, "have an embarrassing way of leading one on to private property, and even in at back gates." *En route* there is much that is interesting and suggestive. Thus Leeming Lane, which coincides with Dere Street, has a run of 13 miles without a single village on it—a rare phenomenon in England. No fewer than eight forts and camps on the line are still awaiting modern excavation methods: when will the money and the men enable us to do our duty by our national history? Miss Mothersole gives some capital short sketches of the results of excavation, *e.g.* at Binchester, Corbridge, and Newstead, and she has laid under contribution all the specialists of note from MacLauchlan to Curle. Of course, she has the usual tale to tell of pitiful and wanton destruction of inscribed stones in the seventeenth century, *e.g.* at Lanchester; and she has well realized "how unsafe it is to trust even the most plausible conjecture as to the exact line of the road." In the spade alone is safety. The most thrilling part of the journey is north from High Rochester, with the road reaching 1674 feet in its crossing of the Cheviots, with the fine Makendon Camps at Chew Green, and Newstead camps and fort for a finish. A few minor suggestions may be permitted. The plates, as well as the figures, should be numbered. Inscription on p. 24: there is no Greek W, though omega somewhat resembles that letter. The "Samian" potter on p. 34 is not VXTVLLI, but MVXTVLLI·M, as at Colchester and Wroxeter (a Lezoux potter of the second half of the second century). "The Tofts," p. 45: the name is probably significant; a toft is a site of an old building marked by ruins. The line of Dere Street should be indicated in relation to Trimontium (p. 237).

S. E. W.

The High Peak to Sherwood.— T. L. Tudor. London: Robert Scott. 1926. 7½ × 5, pp. x. + 398. *Illustrations.* 7*s.* 6*d. net.*

This is a book of unusual interest and deals in a very thorough and attractive manner with one of the most remarkable districts in England. The area described is not confined to one county, yet it is Derbyshire which, owing to the special characteristics of its scenery and to its remarkable geographical position, comes in for the most detailed attention. It reminds us that long before the formation of any such territorial divisions as shires the central portion of England now known as Derbyshire, together with east Staffordshire and west Nottinghamshire, really formed a roughly defined unity—the nucleus of the ancient realm of Mercia. In the seventh century this consisted mainly of the district enclosed between the Humber, the Trent, and the Welsh Marches, together with a loosely defined area south of the Trent. It was these regions—for the most part wild and rocky, and largely covered with dense forests—that so greatly aggravated the task of pacification and settlement, and the same natural characteristics largely account for the measure of wildness and solitude which even to-day in this "Switzerland of England" offer such a vivid contrast to the deplorable progress of "uglification" in modern England. In no other county than Derbyshire, perhaps, have the natural features so conduced to the intermarriage of the leading county families, who, prior to the day of the railway, almost formed one great clan that stretched from the Staffordshire border near Dovedale on the west, across the whole county to the confines of Nottinghamshire on the east. Moreover, there is ground for believing, with the late Lord Curzon, that the purest form of English pronunciation is that found among the educated classes of this secluded hill country in the heart of old Mercia. The geographical conditions of the Peak country, and especially its remoteness from the east and south coasts, have resisted, or at any rate diluted, foreign influences so that the characteristics tend to be quite noticeably local. And it is here that we may naturally look for definitely English, as distinct from Saxon, origins.

The term "High Peak" is by no means, as is commonly supposed, of modern origin. It came into use at least as early as the end of the thirteenth century, and it is found, under the form "Alto Pecco," in documents of the fourteenth century and onwards. Interesting notices will be found in this book of the varied mineral products of the Peak district—the coalfields in the north and east of Derbyshire, the Blue-John mines of Castleton, the lead mines of Wirksworth, and the alabaster quarries of Chellaston, which contributed the material for some of the beautiful work in the Garter Chapel at St. George's, Windsor. In prehistoric remains of various types Derbyshire is one of the richest counties in England. One of the most interesting districts is that of Castleton, and here is celebrated, on May 29 (though clearly of much earlier origin than Stuart times), the famous ritual Folk Dance Festival known as "Garland Day." At Tissington, the home of the Fitzherberts, the Ascension Day celebration of the "Well Dressing" of the five springs of living water round the village green is the most famous festival of its kind in England. Its origin takes us back to very early pagan times, and may have been a legacy from the Roman occupation. An excellent detailed account of this will be found here.

It is doubtless due to an oversight that no mention is made of what is probably the most ancient form of football known. It has been specially in vogue in the ancient towns of Derby and Ashbourne since times immemorial, and is always primarily associated with Shrove Tuesday. In the county town

itself it has become impracticable, but at Ashbourne there are as yet no insuperable barriers to the time-honoured institution, which—so an ancient legend tells us—owes its origin to the rejoicings for a victory over Danish invaders, one of whom, having lost his head, thereby provided the object with which the sport was so wholeheartedly enjoyed.

The sketch-map (p. xi.) is unfortunately small and inadequate, and gives no county boundaries, but there are many charming illustrations, the delightful little sketches in the text being often of real beauty. Lastly, much light is thrown on the significance of the place-names of the Peak region, so many of which are of geographical import and of extremely ancient origin.

W. W.

Leeds: Old and New.— **Percy Robinson, F.R.I.B.A.** Leeds: Richard Jackson, Ltd. 1926. 9 × 6, pp. xvi. + 151. *7s. 6d. net.*

Leeds and its History.— Leeds: The Yorkshire Post. 1926. 8½ × 5½, pp. 192. *2s. net.*

In July 1926 the City of Leeds celebrated the three hundredth anniversary of its existence as a municipal borough, with celebrations which were directly responsible for the preparation of the second of these volumes and gave favourable conditions for the other.

The scope of Mr. Robinson's work is stated in its sub-title, "A Picturesque Sketch of the History of the City. . . ." It gives a vivid outline account of the growth of Leeds; but its main interest is in its studies of architectural features, particularly of the domestic architecture of the last three centuries. It is illustrated by thirty-one reproductions of drawings by the author, many of which are of buildings since demolished or so altered as to be almost unrecognizable. It would add to its value if each of these illustrations could be dated precisely; as it is we are only told in the preface that many of them were drawn more than thirty years ago.

The second volume is a reprint of the more important articles contributed to the Tercentenary Supplement of the *Yorkshire Post*, under less exiguous conditions as to space. "The Story of Leeds" is briefly and clearly set out by Professor A. Hamilton Thompson. Mr. A. N. Shimmin writes of "The Ninety-Seven Industries"; and Sir John Eaglesome contributes a section on "The Waterways." Mr. J. C. Gregory and Dr. H. Thompson are responsible for articles on "Science" and "Music" respectively, and the rest of the book is written by unnamed members of the staff of the paper. Probably the sections of widest general interest are the four on History, Industries, Transport, and Town Planning. The first of these sketches the growth of a village to a manorial borough (which, in spite of its advantages of location, was of merely local importance before the Industrial Age), and to a large modern industrial city. The Labour Exchanges classify the insured workers of Leeds under ninety-seven industries, a good indication of the variety of its industrial enterprises; and it will probably surprise many citizens of Leeds as well as others to learn that the woollen and worsted industry ranks only fourth among these, as measured by the number of insured workers. Six principal occupations account for two-thirds of the industrial population, namely, Tailoring (30),* Distributive Trades (18), General Engineering (15), Woollen and Worsted (8), Building (7), Printing and Bookbinding (6), and there are twenty-five others with more than a thousand workers each. The figures are for 1925–6, in which year engineering was very depressed. When in full work that industry

* Figures in brackets show number of insured workers in thousands.

ranks second in numbers and probably first in value of capital employed and goods produced.

The high position of the Distributive Trades is a result, and to some extent a measure, of the importance of the city as a commercial centre and regional focus for a large part of Yorkshire. The articles on Transport describe the development of means of transport during the Industrial Age from the pack-horse to the motor lorry. The chief waterway, the Aire and Calder Navigation, is one of the few in England which still pay their way. It makes Leeds accessible to small coasting vessels and regularly runs barges of 100 tons capacity; many people look forward to its development into a Ship Canal. Such a development may be essential to the continuance of the growth of Leeds, and the obstacles in the way are financial and political rather than physical. In Town Planning the City Council, working through an energetic Improvements Committee, has during the last fifty years made steady progress in clearing slums, widening streets, making roads, and in other ways amending the city. Leeds grew very rapidly in the early part of our Industrial Era, its population trebled between 1801 and 1841, and the legacy of overcrowded and unplanned building of that period still weighs heavy on the city, though its citizens have reason to be proud of what has been accomplished.

These books are of real value as contributions towards our knowledge of a fairly typical industrial city. Mr. Robinson's volume is well printed and got up, and its illustrations alone make it good value for its price. The second volume is in smaller type and paper covers, and has no index. The reader who wishes to get the best from either will need to supplement the illustrations by an adequate map. C. B. F.

E. V. Lucas's London. London: Methuen & Co. 1926. 9 × 5½, pp. xii. + 431. *Coloured Plates and Illustrations.* 20*s. net.*

This volume consists of Mr. Lucas's two well-known books on London—'A Wanderer in London' and 'London Revisited'—with some additional matter. In this form it is suited rather for reference than to be a companion for the rambler: one is never quite sure where one will be conducted next, either in time or space. An example may be taken from the illustrations: it is a little surprising at first to find the "Bush Building" followed by the "Avenue at Middleharnis," but that is all part of the entertainment, and Mr. Lucas is certainly a successful showman. Is it permissible to ask, however, whether it is altogether appropriate in such a book to give quite so much space to the *interior* of museums and art galleries?

Unknown Hampshire.— Clive Holland. Illustrated by Douglas Snowdon. London: John Lane. 1926. 9 × 7½, pp. xv. + 260. 15*s. net.*

It is perhaps rather late in the day to comment upon the title of this series: yet if one were to inquire what were the best-known parts of Hampshire, one would probably be told Bournemouth, the New Forest, Winchester, and Southampton, so that it is not very stimulating to find that the first chapter here deals with the outlines of the history and topography of the Forest, and that later chapters are devoted to the other centres mentioned. This is not to say that the picturesque hamlets and byways are entirely neglected, but more space could have been given to them profitably, for the author realizes their charm and at times describes natural beauties with feeling. His frequent remarks upon the presence of motor coaches and tourists—not to use a less dignified name—form in themselves a commentary upon his title. He hardly does justice to the perhaps less well known Romsey Abbey, the architectural

interest of which he hurries over, while the greater part of its history he seems to have derived from another book in a well-known series.

Coal and the Coalfields in Wales.— **F. J. North.** Cardiff: National Museum of Wales; London: Humphrey Milford. 1926. $8\frac{1}{2} \times 5\frac{1}{4}$, pp. viii. + 175. *Thirteen Plates, Thirty-two Fgures.* 1*s.*

The modest form, and the still more modest price, of this paper-covered volume would scarcely lead one to suspect the wide scope and informative nature of its contents. In the words of the preface, the object of the memoir is "to provide, in language intelligible to those who have no special knowledge of geology and kindred branches of science, an account of the present state of our knowledge concerning the nature and origin of coal, and its distribution in the Principality." Too often the preparation of a popular museum handbook of this character is entrusted to authors characterized by their enthusiasm rather than by an intimate knowledge of their subject. In the present instance, however, Dr. North has not only been connected with the National Museum of Wales for thirteen years and is head of the Department of Geology, but is also a geologist who has achieved a reputation by the thoroughness characterizing his work. That thoroughness is a marked feature of the book under review. The first half is devoted to coal in general—its constitution, mode of occurrence, and mode of formation. Agreement has not yet been reached on questions relating to the constitution of coal, and it would be difficult to find a more adequate summary of the present state of knowledge—including the now well-known conclusions of Stopes and Wheeler, as well as the results obtained by Seyler as recently as 1926. Again, in the section on mode of formation, there is a clear exposition of the principles of geology involved. But lengthy quotations from Lyell's writings of a century ago have not prevented Dr. North from including a discussion of the bearing of Wegener's hypothesis on the vexed question of the climate of Coal-measure times studied as recently as 1926 by C. E. P. Brooks. The coalfields of Wales, in the second half, are described in equally lucid language and a bibliography of 309 items concludes the whole. Thirteen plates, one of them in colour, and a number of excellent diagrams illustrate the text. The author is to be congratulated on the production of a model museum handbook, which is, in addition, an original work deserving of attention from all interested in the geography and natural resources of Wales.

L. D. S.

Amid the Forests of Normandy.— **Edouard Herriot.** Translated by J. H. Lepper. London: Cassell & Co., Ltd. 1926. $8\frac{1}{2} \times 5\frac{3}{4}$, pp. 275. *Illustrated.* 10*s.* 6*d. net.*

M. Herriot's eulogy of Normandy, its countryside and its people, doubtless read more easily in the original French than in this translation, though perhaps Mr. Lepper has striven consciously to retain the Gaelic flavour. The style is certainly vigorous and picturesque, in keeping with the subject. Despite its title the book is mainly historical: two long sections are devoted to Monsieur de Rancé, the restless seventeenth-century ecclesiastic, and Charlotte de Corday, the "Norman Judith." The monuments of the province are also given a prominent place, and are the theme of most of the illustrations. The needs of the tourist are, however, not altogether neglected.

Les Préalpes de Savoie (Genevois, Bauges) et leur Avant-Pays.— Étude de Géographie Régionale, par **André Cholley.** Paris: Armand Colin. 1925. $9\frac{1}{2} \times 7\frac{1}{2}$, pp. iii. + 756. *Eighty Text Figures, six Plates. Broché* 55*fr.*

To criticize adequately a book such as this presupposes a very considerable knowledge of local detail. For a similar reason the book is not likely to make

a very wide appeal to geographers in general. But this must not be understood in any depreciatory sense. A work of this type and of the dimensions of this particular volume naturally means a great deal of field work and diligent researches into archives and other sources of information. In its present form the book offers a very complete account of the geography—in the widest sense of the word—of the pre-Alps of Savoy, though the ordinary reader will miss two important requisites of any such work: a good index and a tolerably complete and large-scale map of the area. Unfortunately both are absent.

The matters dealt with cover a very wide range. The volume consists of four parts: the first deals with the structure and physiography of the area in considerable detail; the second with the climate and hydrography; the third with man and natural conditions; and the fourth with types of life. The area described is bounded, roughly, on the north by the Arve downstream from Cluses to the Swiss frontier; on the west by the Rhône and the Montagnes de l'Épine; on the south by the Chartreuse; and on the east by the valleys of the Isère and Arly. Perhaps the most important features of this region are the three great transverse depressions of the Arve, Annecy and Chambéry-Bourget. Physiographically these valleys owe their formation in part to fluvial erosion in Pliocene times, largely guided by the geological structure. During the Ice Age they suffered considerable modifications: deepening and widening. On the other hand, the secondary valleys owe little to ice-work, and their forms are due mainly to water erosion. Apart from their physiographical interest, the valleys are of the utmost importance in the economic and human development of the area. Further, they offer interesting climatic problems.

In many respects the morphology of the area is of the Jura mountain type: "on y retrouve les voûtes et les plateaux calcaires, les vaux et les combes, les cluses de Jura, et le même paysage d'escarpements et d'éboulis." In the pre-Alps, however, the Urgonian is the main structural element. Further, the tectonic structures are more complicated than those characteristic of the Jura. The ridges are nearly all strongly asymmetrical—the western slopes being very steep. Other differences from the Jura are due to a more complex hydrographical system and to the influence of the main Alpine glaciers.

In a short review it is impossible to analyze each section of the volume. Suffice it to say that the whole bears the impress of careful and skilled work. From the point of view of readers not acquainted, or only slightly acquainted, with Savoy, it is perhaps a pity that the author has not made more complete summaries of each part. Its large size and the comparative difficulty of finding one's way about the book render it particularly unsuitable for any but specialists. Furthermore, the text figures and sketch-maps are not all so clear as could be wished.

Nevertheless these minor points ought not to mask the fact that it is a scholarly work and one that all interested in detailed regional studies may consult with profit. J. A. S.

Le Royaume Serbe Croate Slovène.— Albert Mousset. Préface de M. Albert Thomas. Paris: Bossard. 1926. 9 × 6, pp. 270. *Illustrations.*

In 1921 M. Albert Mousset published a book giving a general account of the Serb-Croat-Slovene kingdom, including a section on economics. That this book filled a place in current literature is shown by the fact that the present re-issue is described as the twelfth edition. It has now, however, been completely recast, and in particular the whole of the section dealing

with the social and economic life of the new kingdom has been relegated to a separate volume, now in the press. The present book deals, in brief and summary fashion, with the geographical situation and territorial organization, gives a somewhat fuller account of the constitution and administration, and goes on to discuss in some detail the thorny and complicated subject of internal politics and the aims of the various political parties. The separate elements of the population are then considered, together with the religious groupings. After a brief summary of external politics in relation to the different states of Europe, we have sections on the Press, Education, the Theatre, and the Arts. This summary will show that the book is not primarily geographical in aim, though it contains a good deal of raw material of which the geographer can make use. There is no map, but a number of striking illustrations are included. There is also an index of proper names. M. I. N.

Encyclopädie der Erdkunde.— Teil: Nordeuropa, bearbeitet von **Univ.-Prof. Dr. Gustav Braun.** Leipzig u. Wien: Franz Deuticke. 1926. 10 × 7, pp. 212. *Thirty-five Maps.* *G.M.*10.

This book opens with a useful summary of the contributions of workers in distant fields to the formation of a fairly complete cartographical survey of Northern Europe. The more general literature of the subject has also been passed in review, and a complete list of special works heads each section.

The second part deals briefly with the physical features of the region as determined by its underlying geological structure. An excellent sketch-map, with explanatory text, brings out clearly the relationship between the original Baltic shield, the stratified rocks still almost encircling it, and the confused mass of the great Caledonian thrust which, on the west, partly overlies both. The striking features of the Quaternary scene-changes are then described, as preparing the way for the present distribution of land and sea in their strongly individualized geographical setting.

A third section, with its accompanying map, gives categorically the natural divisions of the region; then follows section 4—occupying nearly five-sixths of the book—and giving a detailed description of each area. Here the writer really comes into his own. The outstanding features of each division are dwelt upon with precision, one would almost say from personal observation, were that possible in an area so wide. The age-long interaction between environment and humanity and, in each type of settlement, the evolutionary tendencies controlling choice of site and historical development are faithfully recorded.

A final section points out which features, individual to the region, set it from the rest of the world apart. Had this section preceded the one just mentioned, some repetition were possibly avoided.

For the specialist the book is a mine wherein to delve, but it hardly attains its real object, which is, presumably, to form in the mind a well-balanced picture of the region. For this purpose the second section is too general and the third too particular, so that the earnest student risks being stunned with facts before his grasp of the region as a whole is secure.

Illustrations, too, are seriously lacking: the reduced large-scale sectional maps do not supply this need. Sketches of the scenic types, as vivid and convincing as the descriptions, would have added greatly to the value of the work.

E. G. W.

ASIA

A Brief Outline of the Campaign in Mesopotamia, 1914–1918.— Major R. Evans. London: Sifton, Praed & Co. 1926. 9 × 5½, pp. 135. *Appendices and Four Maps.* *7s. 6d. net.*

Many books, and several good ones, have already been written on the campaign in Mesopotamia, but the military student who confines his studies to this one will miss nothing. Though it purports to sketch but the outline of the subject, the various aspects of the campaign, political, strategical, tactical, and administrative, are dealt with in a really masterly way. The author has marshalled all the relevant facts and details of the operations without losing sight of the broader issues and factors affecting the higher conduct of the campaign. He rightly brings out the interdependence of policy and strategy, a lesson also vividly brought home by Sir William Robertson's well-known book. Above all, the merit of this work lies, not only in the accuracy of its detail, but in the frank, fair, and authoritative criticism which it delivers in respect to each of the major phases of the operations, and of the responsible commanders and political advisers. Written by a soldier for soldiers, the causes of success and failure are analyzed in a decided and effective manner, and one may safely advise every student of the art of war to add this excellent little book to his library. J. W. M. C.

Mirabilia Descripta—Les Merveilles de l'Asie, par le Père Jourdain Catalani de Sévérac.— Henri Cordier, Membre de l'Institut, etc. Paris: Paul Geuthner. 1925. 11 × 9, pp. 125. *Plates I.–XIX.* *125 francs.*

The spread of the Mongol conquests across Northern Asia as far as the Dnieper in Europe, followed by the overthrow of the great Muhammadan dynasty of the Abbasids by Hulagu Khan in 1258, and the religious tolerance displayed by the Mongol rulers, led to that stream of travellers to Asia in the thirteenth and fourteenth centuries, who lifted the veil that had so long covered the greater part of that continent. Many of these were emissaries of the Church, mainly Franciscans, but to this group belongs also the French Dominican monk Friar Jourdain Catalani de Sévérac, whose 'Mirabilia Descripta' contains not only interesting details regarding Armenia and Persia, but also the best account of India that has come down to us from so early a period. Of this work there is only one manuscript extant. Baron Coquebert de Montbret published a transcription of it for the Société de Géographie in 1839. Sir H. Yule translated this into English for the Hakluyt Society in 1863, with notes which he admitted were incomplete; but he did not examine the original MS., which was then in the British Museum. Yule amended and amplified his notes in his 'Cathay and the Way Thither' (second edn., 3, 39–44). His old friend and collaborator, the learned H. Cordier, completed this new edition in September 1924, only a few months before his death. Besides an historical introduction, a French translation, and a facsimile reproduction of the Latin MS., Cordier, while incorporating several of Yule's notes, added many notes of his own, clearing up doubtful points and inserting a mass of useful references that bring the work up to date. Had the task been accomplished in his full vigour he would doubtless have brought it to greater perfection. The absence is felt of a map showing all the places named by Jourdain, as also the need for more careful revision of the Latin text to make it agree more accurately with the MS. De Montbret's transcription has been revised in several places, but much remains to be done in this respect. A few examples must suffice. *Nibibus*, on p. 109, should read *nubibus*, as in the MS. *Aniba*, on p. 112,

which has been reproduced in this form in both the English and French translations, is *amba* in the MS., and this is the correct transliteration of the Persian word for the mango. *Sylem* (p. 119) and *abundat* (*ib.*) should read *Sylen* and *habundat*, respectively; and so on. Mohelar, again, in the French translation (p. 84, l. 14)—Yule's Mohebar—should read Mohabar, as it clearly is in the MS. For convenience of comparison between the three texts, the addition of paragraph numbers in the margins would have been of much assistance.

Unfortunately we receive little or no further light upon the personal history of Jourdain or the chronology of his travels. The only definite dates recorded by him are those contained in his letter of 20 October 1321, from Gogha on the east coast of Kathiawar, and in his letter of 20 January 1323 (? 1324) from Thana near Bombay. Curiously, both Yule and Cordier say that from this latter letter we learn that Jourdain had started from Tabriz to go to Cathay, but had been driven by a storm to land at Thana. The letter as printed in Latin does not, however, bear this out. There are reasons for believing that he was in Persia and India from 1320 to about 1328; but we do not know when he actually returned to Europe. From certain bulls of Pope John XXII. of different dates in 1329 and 1330 reproduced by Mgr. Mercati from the Vatican registers, it is clear that Jourdain was in Europe in 1329, and that he did not leave Avignon before April 1330, to take up the new bishopric of Quilon to which he had been appointed. After that we lose sight of him altogether, except for a story believed by some authors that he suffered martyrdom at Thana in or about the year 1336. We do not even know when he wrote his 'Mirabilia,' though both Yule and Cordier hold that it must have been before leaving Europe to assume his episcopal functions. If so, it would seem that he must have visited Quilon after his letter was despatched from Thana: but the question is not free from doubt. C. E. A. W. O.

The Ao Nagas.— **J. P. Mills, M.A., I.C.S.** Published by direction of the Government of Assam. London: Macmillan & Co. 1926. $8\frac{1}{2} \times 5\frac{1}{2}$, pp. xviii. + 500. *Two Maps and Illustrations.* 30*s. net.*

The Government of Assam are to be congratulated on the fruit of the wise policy inaugurated by Sir B. Fuller in 1903 of promoting the preparation by competent writers of monographs on the more important tribes of that province, so rich in ethnological interest. Commencing in 1907 with Col. Gurdon's admirable work on the Khasis, a number of valuable accounts have now been issued of different tribes, forming a reliable basis for comparative ethnological study. This is the second monograph prepared by Mr. Mills, whose important account of the *Lhota Nagas* appeared in 1922. The present work deals with their neighbours on the north-east, the *Ao Nagas*, and supplies a mass of information, collected by methodical inquiry carried out in a scholarly manner, about their domestic life, religion and ceremonial practices, language, folk-tales and songs, supplemented by useful notes by Dr. Hutton.

There are some curious errors in the first note on p. 1. Ptolemy wrote in the first half of the second (not in the third or fourth) century A.D.; and there was no such language as Urdu in his time. Shihab-ud-din Talish wrote his account of Assam in the latter half of the seventeenth (not sixteenth) century. The question of the meaning of the name Naga was dealt with by Col. Waddell in *J.A.S.B.*, Pt. III., 1900, p. 62. Ptolemy's *Naggalogai* (see Renou's Greek text) probably represents *nagaloka* ("hill people"), though *nanga* (Sans. *nagna*), "naked," is also sometimes applied to such scantily clad folk of the jungle, as it is to nude ascetics. Several meanings of the word *nāga*, moreover, such as a large snake or serpent, a race of monstrous men, a name of various

plants, are probably all derivable from the root word *naga* (hill), hilly country being their traditional habitat. Enhanced value would have attached to many references to trees and plants, and their special uses, had the botanical names been added for correct identification.

This work, with its maps, illustrations, complete bibliography of the Naga Hills and exhaustive index, is nevertheless a model of what such monographs should be; and we wish the example of the Assam Department of Ethnography had been followed in other parts of India, where tribes and peoples of analogous interest still survive, and call for more detailed and scientific treatment than they have hitherto been accorded. C. E. A. W. O.

History of Siam.— W. A. R. Wood, C.I.E. London: T. Fisher Unwin, Ltd. 1926. 9 × 6, pp. 294. 15*s. net.*

This is a most welcome volume to all who are interested in the East. For the first time we have a connected and authoritative account of an interesting people and wonderful country, the sole survivor of the dozen kingdoms existing in South-East Asia a hundred years ago—a fact of which its people may well be proud.

The destruction of all early records in the sack of the capital of Ayut'ia by the Burmese in 1767, and the inaccuracy of eighteenth-century compilations, has made the task no easy one, in spite of the researches of that scholarly member of the Royal Family, Prince Damrong; though some light is thrown on the history from the sixteenth century onwards by the accounts of European travellers like Pinto, Floris, and Van Vliet.

It is, as usual, a history of kings, of those who succumbed and of the others who ruled in their stead. In Siam the losing monarch often suffers extinction, in the peculiar manner reserved for those whom no plebeian hand may touch, by being enclosed in a velvet sack and clubbed to death.

The Tai race, from which the Siamese and the inhabitants of the Shan States in Burma derive their origin, come from hardy northern stock. Driven from their home in Nanchao (Yunnan) in China by the Tartar Kublai Khan, in 1253, they found their way southwards. They were already a highly civilized community with a regular administration, a fact admitted in respect of these "Barbarians" even by Chinese writers.

Thus driven forth they spread gradually west and south. In 1275 arose King Ramk'amheng, who prepared the way for the founding of the State of Siam seventy-five years later, with its capital at Ayut'ia. Ramk'amheng was a man of original ideas and great energy. He twice made a journey to China; in 1294 in order to see the aged chieftain Kublai Khan, and again in 1300—no mean pilgrimage to make even once in those days. As Mr. Wood says, we can only wish he had left us a diary giving his experiences, as the Chinese ambassador from Kublai Khan to Cambodia did in 1296.

In 1350, in a somewhat obscure way, a Prince of the neighbouring state of Chiengmai [Zimme] rose to power, became ruler of Siam, and founded the city of Ayut'ia [Ajodhya]. On succeeding as King of Siam he took the title of Rama T'ibodi [Ramadhipati]. He was remarkable for his legislative enactments.

Of other kings of note we may mention Boroma Trailoknat (1448–1488), who introduced many administrative changes of importance. One of these, known as the rule of *Sadki Na*, actually remained in force until modern times, being abolished by King Rama V. (1868–1910). By this rule the rank of every man in the kingdom was determined by the amount of land he was allowed to

possess, which varied from 4000 acres for a prince to 10 for a peasant. This king is also responsible for the "Palace Law," which is still nominally in force. Its rules were somewhat severe, as we find, for instance: "For shaking the King's boat—death"; "for kicking the palace door—the offender's foot to be cut off."

In 1509 Albuquerque came to Malacca, which Sequeira had visited a year earlier. This opens a new chapter in Siamese history. Albuquerque, hearing that Malacca was a dependence of Siam, sent Fernandez Duarte to Ayut'ia with a letter to the King, Rama T'ibodi II. (1491–1529). On this opening up of communication with the nations of Europe King Rama T'ibodi initiated the wise and tolerant policy towards foreigners which has ever since distinguished Siam. In 1612 the English arrived on the scene, the *Globe*, a British ship, anchoring in Patani harbour on June 23, and passing on to Ayut'ia in August. On board was the merchant William Floris, who has left us an account of his experiences.

From this time on English, Dutch, and Japanese are added to the Portuguese as commercial rivals. In 1675 the British ship *Phœnix* brought to Siam the Greek adventurer Constantine Phaulkon, who rose to be chief minister of the country. Europeans poured into the country, and embassies from Siam to France and from France to Siam took place, Louis XIV. sending to Phaulkon the Order of St. Michael and St. Peter in 1687.

There is not space to linger over details here, but a reference must be made to the capture of Ayut'ia by the Burmese. Twice was this town subjected to the violence of the Burmese: first in 1569, when Bhureng Naun sacked it and carried away the Royal Family captive; and again in 1767, when the Burmese King Alaungpaya's forces destroyed the city so effectually that it has remained a heap of ruins ever since, a new capital being started by King Taksin (1767–1782) at Bangkok.

Excellent as it is this is mainly a "Book of Kings"; indeed, it could not, probably, have been anything else without becoming too large. But may we hope that Mr. Wood or Prince Damrong, or both in collaboration, will give us a "Book of the People," dealing with their daily life, customs, and religion through the ages, especially religion, which in the East enfolds the others?

The book is well printed and illustrated. There are a few not very important slips: thus on page 35 Kublai Khan is said to have destroyed Nanchao in 1253, and on page 52 in 1254; King Leotai is said on page 59 to have died in 1347 and on page 65 in 1354; and a slip of 1846 for 1546 is made in the note on page 106. In a second edition certain additions might be made with advantage. A list of kings with dates showing contemporary rulers of Siam, Chiengmai, Cambodia, and Burma would be useful; a list of authorities is essential; the map might be clearer; and last, but not least, the index should be fuller.

C. E. L.

Things Chinese.— **J. D. Ball.** 5th edition, revised by **E. Chalmers Werner.** London: John Murray. 1926. 9 × 6, pp. 766. 24*s. net.*

This valuable and fascinating volume makes an unusually timely appearance, in view of the widespread and often mischievous ignorance that prevails at a period like the present, when it behoves all sensible people to know something of the country and people with whom we are so gravely concerned. A prominent Cabinet Minister would have thus been spared from speaking light-heartedly about "The balmy air of Far Cathay" had he learned a few cardinal facts of a geographical character as to the climate of that country;

such as, for instance, that at Peking the winter temperature often goes down to 20 degrees below zero, and that even as far south as Shanghai—nearly on the same latitude as Cairo—the cold has been so severe that the river has been thickly frozen over and large numbers of cattle and human beings have perished.

It would probably be highly surprising to party politicians of another stamp who demand that negotiations should be carried on with a section of the people, as if they represented the Chinese nation as a whole, to learn that nearly 90 per cent. of these were illiterate, out of a population of upwards of 400,000,000; that among these there are at least eight dialects in wide and common use, differing as much as English, German, French, and Dutch; and that frequently, among natives of different provinces, the easiest means of oral communication is in "pidgin English"! Among the important items of information made clear in this book is that of the widely differing characteristics of the Chinese of the north and south respectively, due largely to their geographical situation and environment, facts which help largely to account for their variations in psychology and occupations. Suggestive notes will be found on the results of the contiguity of China to its island neighbour Japan, on whose civilization and history it has exercised so profound and varied an influence. To the debt owed—and quite freely owned—by Japan for her ancient culture, must be added even the name by which she is known to the outside world; for the word "Japan" is but a Western corruption of the title "Jihpen" bestowed upon the islands that lay in the path of the early Chinese fishing junks as they sailed out towards the rich fishing grounds surrounding the "Land of the Rising Sun"—Jihpen.

Let it be said, in conclusion, that in this latest edition of 'Things Chinese' we have an absolutely invaluable work of reference to the subject with which it deals. The thoughtful student of such matters will find enlightenment at every turn, for, taken in conjunction with the current edition of the China Year Book, it constitutes a veritable *Encyclopædia Sinica*, a study of which by those members of Parliament who seek to acquire or to impart information inside or outside of the House of Commons upon current affairs in China, can be very earnestly commended. W. W.

China: Land of Famine.— Walter H. Mallory. New York: American Geographical Society. 1926. 10 × 7¼, pp. xvi. + 199. *Numerous Illustrations, including Sketch-maps.* $4.

The author of this volume, whose preface is dated "Peking, April 6, 1926," and who describes himself as Secretary to the China International Famine Relief Commission, states in his preface that it is, so far as he knows, the first work published in English dealing exclusively with the subject of Chinese famines, and that his purpose has been to set forth "as briefly and understandably as possible, why China has so many famines and what, in his judgment, can be done to prevent them." Whether or not this is the first attempt of the kind in English, it must be recognized that the author has produced a volume demanding the most earnest consideration from all interested in the future of China—one may even say, of the human race.

After a brief Introduction there follow four chapters on the causes of famine under the heads Economic, Natural, Political, and Social; and four on the cures under the same heads. The chapter on the Natural Causes mentions three chief ones—excessive rains, droughts, and locusts. Excessive rains are disastrous in two ways. In the north-west the chief damage is in the washing away of soil, especially where the slopes have been deforested, and the

destruction of terraces made for cropping. Such destruction is naturally most rapid in the elevated parts of the loess area. In the eastern plains, where the slope is exceedingly slight or nil, the devastation is mainly due to flooding, the risk of which places millions of Chinese along the banks of the Yellow River in an appalling situation. Against drought, to which the northern parts are most liable, there is no remedy where irrigation cannot be resorted to, except the old one of Joseph—food storage, and this in imperial times was not neglected. But among the political causes of famine perhaps the most serious is the fact that one of the first results of the overthrow of the Manchu *régime* was the abolition of the public granaries, the maintenance of which for the provision of food against times of need had been a long-established policy of the previous government (pp. 67–8). As for locusts, we are told that in China they have not caused such serious disasters as in some other countries, and that there is some compensation in the fact that in the area most subject to such visitations they are eaten by the people.

Among the general measures required in the fight against famine importance is attached to three. First there is improved transport, of which, however, the author sees little hope in the near future. The cost of extending the railway system in China is, we are told (p. 90), at present almost prohibitive.

Another safeguard against famine urged again and again is the introduction of manufactures, whether as village industries or on a large scale (pp. 19, 125, etc.); but when this remedy is recommended it should never be forgotten that it can operate only in so far as there is the possibility of obtaining the necessary food by the sale of the products. Where adequate food supplies cannot be introduced into a country or region the pursuit of manufactures can at best only have an influence on the distribution of what food is available. This is nowhere expressly noticed by the author, but that it is nevertheless in his mind may be fairly inferred from the emphasis which he lays on the absolute necessity for limiting the growth of the population if there is to be any permanent solution of the problem of famine in China (pp. 4, 183–191). From the last paragraph of the book it is indeed clear that the author feels that in studying famine in China he is dealing with a problem of much wider scope. "Over-population," he says, "is now a matter of world concern. What has occurred in China will, if the human race lets Nature take her course, most certainly occur in other lands which are now prosperous."

G. G. C.

The Sacred 5 of China.— William E. Geil, Litt.D. London: John Murray. 1926. 9 × 6, pp. xix. + 355. *Illustrations.* 24*s. net.*

The figure 5 appears so often in Dr. Geil's text that it is almost impossible to avoid beginning by stating that it stands for the five prominent holy mountains—Tai Shan, Nan Yo, Sung Shan, Hua Shan, and Heng Shan. The expressed purpose of the book is to study the fundamental motives of nature worship—reaching back to the primitive through the peasant; and accounts of visits to the peaks form its framework. Quotations are numerous, largely drawn from royal edicts and ceremonial usages. They certainly give considerable insight into the spirit of the people—an insight which the reader would still appreciate without the frequent and superficial references to the history of other countries. The book is hardly calculated to appeal to the general reader, though perseverance, or luck, will discover interesting passages, such as the account of the methods of Wan Li, the surveyor.

Through Kamchatka by Dog-Sled and Skis.— Sten Bergman. London: Seeley, Service & Co. 1927. 9 × 6, pp. 284. *Illustrations and Maps.* 21*s. net.*

In 1920 the Swedish Geographical Society organized an expedition to Kamchatka under Dr. S. Bergman for biological and ethnographical research. This volume is a popular account, translated from the Swedish, of two of the chief journeys undertaken by members of the expedition. Little has been published in English on Kamchatka, and nothing in recent years, so this brightly written and informative book is very welcome. Our main criticism is that it is too short and omits all account of the summer work, possibly because that is a poor season for travelling in Kamchatka compared with the winter. After an adventurous voyage from Japan, including a shipwreck at Cape Lopatka, the expedition made its headquarters at Petropavlovsk, and thence the author moved north by sea to Ust-Kamchatsk. His first journey was southward by the Kamchatka valley and over the Ganal tundra back to Petropavlovsk. The second winter he went north over the same route as far as Klyuchevskoe and then up the Yelovka valley and over the high Stolbovaya tundra along the old post route to Okhotsk, as far as Tigilski. From there he turned southward, following the very indifferent west coast route for some 600 miles to Bolsheryetsk and eventually Petropavlovsk. This return march was through the poorest region of Kamchatka and one of the few parts in which the Kamchadals are still to be found retaining their own language, but otherwise dying from the effect of Russian and Japanese influence. Elsewhere in Kamchatka the Kamchadals that remain have mixed with the Russians and adopted their language. Deviations were made to visit the reindeer-breeding Lamuts and Koryaks in the western interior, a people about whom little has been written. Being off the few routes they have come little under Russian influence.

Since Petropavlovsk gave place, first to Nikolaevsk and later to Vladivostok, as the Russian naval station in the Far East, Kamchatka has lost what little touch it had with the outer world and is rarely visited except by a few traders and Japanese fishermen. The routes followed by Dr. Bergman used to be more frequented than they are to-day, and are in fact the only available routes in Kamchatka. They are well dotted with small villages, but conditions are very primitive and civilization is almost at its limits. The chapters on native life are valuable, and the description of the Kamchatkan villages and their communities have considerable geographical interest. It is noteworthy that wherever the author went he was received with courtesy and attention and helped in the pursuit of his researches, not only by the natives and a few Scandinavians he met, but also by the Russians. The book is well illustrated, although Dr. Bergman had the misfortune to lose most of his photographic material at the outset of the expedition. The maps, though small, are adequate. The scientific results of the expedition are now in course of publication in Sweden. R. N. R. B.

AFRICA

Ancient Egyptian Materials.— A. Lucas. London: Edward Arnold & Co. 1926. 8 × 5½, pp. viii. + 242. *7s. 6d. net.*

The author of this book, a well-known chemist, has already earned a reputation that extends to those whose knowledge of chemistry is slight. His book on 'Forensic Chemistry' placed his expert knowledge at the disposal of a public interested in legal questions; the present work performs the same

function for Egyptologists, and should be an indispensable book of reference for any who use Egyptian antiquities as material for historical geography. The scope of the book is indicated by the chapter titles: Building Materials, Glass and Pottery, Metals, Precious Stones, Writing Materials, and many others; but it may be well to mention that only those which lend themselves to identification by chemical analysis are dealt with; neither "food" nor "cereals" can be found in the index, and therefore no light is thrown on the present controversy as to whether wheat as well as barley was cultivated in the earliest times. The method is to "include a description of each material dealt with, its nature or composition, its use and, whenever possible, its place of origin and the date when it was first employed." Full references to authorities are given, with the salient points of published analyses, while many analyses made by the author are given in full in an appendix.

One of the greatest uses of the book will undoubtedly be the correction of errors: for example, Kohl, the black pigment used for painting round the eyes, is constantly referred to by antiquaries as *Stibium*, of which Latin word the usual equivalent is antimony. One can imagine a student of ancient trade-routes ascertaining that antimony ores do not occur in Egypt but are well developed in Persia, and deducing a trade between the two countries dating from the period of the earliest known use of Kohl: Mr. Lucas finds that in practically every instance he has tested the Kohl is Galena (sulphide of lead), and probably of Egyptian origin. On the other hand, a connection with Persia from Archaic times onward is suggested by the use in jewellery of lapis lazuli, though later an artificial substitute coloured by copper obtained from Sinai was commonly employed; the use of orpiment as a yellow pigment, the probable source of which was Asia Minor, where it occurs naturally, is also confirmed. We may regretfully agree with the author in his discussion of "Alabaster": to the mineralogist or geologist the word always refers to a form of calcium sulphate; objects of "alabaster" are constantly referred to by Egyptologists, but the substance is always a carbonate of lime, for which the term "stalagmite" should be used; but the misnomer is too well established to be altered.

The short and modest summary at the end of the book, based on the great number of accurate details, is a valuable contribution to the history of civilization. Early Egypt must always be the great example of a copper age; tin does not occur, and therefore bronze or, later, tin ore to combine with the copper from Sinai for its manufacture, was an import. Before entering on an iron age Egyptian civilization was already decadent. Of materials imported up to the period of foreign conquest in the Eighteenth Dynasty a few came from the south, but a large majority from Western Asia, and very many of these from Asia Minor, a land which may still hold many a secret for future research when opportunity offers. We congratulate the author on the publication of so much useful work. C. N. B.

Dictionnaire des Noms Géographiques contenus dans les textes hiéroglyphiques.— Henri Gauthier. Vols. 1–3. Cairo: Royal Egyptian Geographical Society. 1925–6. 11 × 9. Vol. 1, pp. viii. + 218; 2, pp. 170; 3, pp. 156.

This work, dedicated to H.M. King Fuad, is intended to replace Heinrich Brugsch's great *Dictionnaire Géographique de l'ancienne Egypte*, which appeared half a century ago. Much progress has been made in Egyptian knowledge since then, and M. Gauthier's work is very acceptable as recording this progress

in the domain of geography. The work will consist of six volumes, of which he first three have now appeared.

We cannot help regarding it as regrettable that in a scientific work of international interest and value the author should have used an old-fashioned and unscientific transliteration of ancient Egyptian, and one intended moreover apparently only for French-speakers. Thus the French *ch* is used instead of *š* for our *sh* sound, German *sch*, Italian *sci*, French *ch*: in a scientific book the international equivalent *š* should have been used. The French *ou* similarly is used for *u*. Nobody else pronounces either *ch* or *ou* as the French do. And side by side with this we get such a very "scientific" transliteration as *q* (without following *u*) for the sound corresponding to ق, while *ḫ* and *ḳḫ* are also used. Why then *ch* and *ou*? One does not ask for the algebraic symbols of the Germans, *ȝ*, *c*, and the rest: but one does expect the elimination of pure gallicisms like *ch* and *ou*, and the adoption of a logical system and one that will more or less produce the same results on the tongues of all readers.

This is the chief criticism we have to make of the book, which will doubtless be very useful to students. Work of this kind can never be absolutely exhaustive, because it is impossible for any author to cover the whole ground of the literature and archæology of an ancient nation in order to collect from it all the mentions of a particular subject such as geography. He can only "faire son mieux," as M. Gauthier has indeed done, with excellent results. And his reviewers can help him in his work by suggesting corrections or additions for an addendum at the end of the work, or a second edition.

Thus, under the heading *Assur* (M. Gauthier of course writes "Assour"), we find the first mention of Assyria apparently given as the annals of Thutmosis III. at Karnak. But there may be an older mention. M. Gauthier quotes from Sir E. Budge's 'Egyptian Dictionary,' p. 964, the locution *pa-Assur*, "the Assyrian," but he does not know the reference for this phrase, which Budge does not give. It is to be found in a hieratic ostrakon, found by Hall at Dair al-Baḥri in 1904, and probably of the reign of Hatshepsut, which mentions "the Assyrian (*pa-Assur*) who works in turquoise," a slave or other immigrant, evidently. (Published by Hall in Naville-Hall, 'XIth Dynasty Temple at Deir el-bahari,' iii. p. 18.) This is probably the oldest Egyptian reference to Assyria.

It is possible that further search might bring to light other instances in which M. Gauthier's references could be extended, but generally it must be said that his modern additions to Brugsch's identifications and to the mass of references on the subject are well considered and useful. H. H.

Rapports des Missions organisées par la Société d'Études du Chemin de fer Transafricain publiés par les soins de la Société de Géographie. 3 vols. **Mission du Transafricain.** Rapport du **Capitaine Nieger,** Chef de Mission (pp. xii. + 334). **Notice sur le Sahara Soudanais,** par le **Capitaine Cortier. Rapport Géologique et Hydrologique,** par **M. R. Chudeau** (pp. 130). *Maps and Illustrations.* Also Carte des Régions parcourues. Société d'Editions Géographiques, Maritimes et Coloniales. 1924–1925. 11 × 7½. £1 19*s.* 6*d.*

The expedition with which this report deals was undertaken several years before the war, which delayed its publication until 1924. The work as it has finally appeared, together with the late M. Chudeau's monograph on the geology and hydrology of the Central Sahara, and the maps which accompany the letterpress, constitute, among many notable productions of the kind, the

most important geographical compilation which has yet appeared on this part of the world's surface. The object of the expedition was to determine the route of a trans-African railway from Southern Algeria to Lake Chad. Whether many or any of the ten European members of the expedition seriously believed in the practical possibility of constructing such a line does not appear; they were directed to find, and so conscientiously explored, a route. Since 1912, when the survey was undertaken, much important development has taken place in the world of transport; the track automobile has rendered trans-Saharan railway projects even more illusory than they perhaps already were. The route chosen by Captain (now Colonel) Nieger and his collaborators does not therefore call for serious critical examination. Almost the most difficult country encountered all the way from Adrar in Tuat to Chad was in the Damergu and Elakkos bush south of Aïr. The obstacles they found in procuring guides and discovering anything definite about this country added to the problem of taking a railway bed over a very uneven surface of what probably was once dune-land but which has long since fixed by dense subtropical scrub. It occurs to one to wonder why a route which avoided Zinder and ran more or less directly from Agades to Chad was chosen in preference to one which, after proceeding almost due south of Aïr, could without greater difficulties of terrain, have skirted the Nigerian frontier, across which a short branch connection to Kano would have given a more direct and economically fruitful access to the sea at Lagos. Fears that the Nigerian railway might divert the trade of the fertile French belt along the boundary between the Middle Niger and Chad, into British territory, may have been a consideration; but no railway to the lake with any pretence of economic responsibility could ultimately have avoided such a junction somewhere, however far along its route it attempted to keep clear of proximity to British territory.

The importance of the railway survey is, however, insignificant compared with the value of the geographical data obtained. A chain of astronomical points from Tuat to Lake Chad was determined. A wide belt of country was surveyed by route traverses hung upon these astronomical coordinates. Seventeen 1/400,000 sheets have been produced and well printed. The more detailed maps upon which they were based are available for reference in Paris. This material is among the principal used for the French 1/1,000,000 Croquis du Sahara now in progress.

Among the special studies prepared, M. Chudeau's summary on dunes and dune formation is particularly interesting and concise. The letterpress of the report deals essentially with geographical matters; the accounts of the sections surveyed are detailed but very clear. The whole publication is a model of what good French geographical work can produce. It is of the greatest credit to all concerned, and not least to the Société de Géographie which has been responsible for its public appearance. Before the war M. le Myre de Vilers, as President of the Société, commenced editing the work; M. Grandidier, the present secretary, brought its publication to a successful conclusion. If, as may be presumed, they are responsible for the final form, they deserve the congratulations of all geographers, for it is worthy of the best French traditions in North Africa. It is said that means did not permit of all the material collected being published—more's the pity. Nevertheless it requires little imagination to read between the lines of the text many of the hardships and dangers encountered by the members of the expedition. The account of critical weeks spent in Northern Elakkos recall so vividly scenes

and times which the reviewer experienced there, that he can only regret, for the reader who does not know this horrible country, the modesty which forbade these French officers in their report giving more than a very matter-of-fact account of their adventures. F. R. R.

Out in the Blue.— Vivienne de Watteville. With a Preface by **The Hon. William Ormsby-Gore, M.P., P.C.** London: Methuen & Co., Ltd. 1927. 9 × 6, pp. xvi. + 254. *Seventy-seven Illustrations and a Map.* 18*s. net.*

This book is a narrative of a hunting expedition. Moreover, it tells of an unfortunate tragedy and reveals a fine example of personal achievement. Mr. Ormsby-Gore supplies a preface in which he bears witness to Miss de Watteville's fortitude and warmly recommends her book to the public.

The expedition took place in 1923, and traversed Kenya Colony and Uganda. Bernard de Watteville and Miss de Watteville, father and daughter, are the moving spirits throughout the enterprise. They received support from the Berne Museum, and their main purpose was to enrich this institution with examples of African fauna. Shooting is therefore the substance of the book. Tracking, chasing, killing, skinning—these are the main objects of activity and interest. The account of them is full of life and energy. There is no lack of industry and enthusiasm, and courage amounting to some degree of recklessness. Whatever else we may think, we must admire the girl who will stand in the open before a bull elephant and photograph it at a distance of 10 yards. All kinds of animals fall before the hunters—lions, elephants, rhinoceroses, giraffe, and the whole gamut of African game. The Berne Museum benefited by 121 specimens. They could scarcely have wanted nineteen lions.

Unfortunately, a great tragedy marred the enterprise. Bernard de Watteville was charged by a lion and killed. In his death he displayed great fortitude, walking for over two hours after having received a terrible mauling. From this point to the conclusion of the narrative Miss de Watteville becomes the central figure. And it is in her remarkable initiative and resourcefulness that we find the main interest of the volume. Her position is unenviable. A girl of twenty-four, her father killed, she is alone in Central Africa with no companion but native porters. How many girls would not give way to despair, or at least would have only one idea, to get to the coast by the shortest route? Not so Miss de Watteville. She takes command, exerts authority, determines to continue the enterprise and complete her father's work. There is nothing half-hearted in her efforts. Her men are hungry, she shoots meat for them; they are insubordinate, she has them flogged, and stands over them to see the flogging done; the expedition is incomplete without a white rhinoceros, she persists until one is slain. Though all who read the book may not care for so much shooting, yet not one will deny to this inflexible purpose their feelings of genuine admiration. R. W. G. H.

AMERICA

Canada: The Great River, the Lands and the Men.— Marion I. Newbigin, D.Sc. London: Christophers. 1927. 9 × 5½, pp. xii. + 308. *Maps and Illustrations.* 12*s.* 6*d. net.*

This is probably the most brilliant book dealing with the history of Canada that has yet been written. Dr. Newbigin has a very happy faculty of getting down to hard rock and stating in simple terms conclusions drawn from much historical data. No doubt this is due in this instance to her wide geographical knowledge, which, perhaps for the first time, has been brought to bear on

Canadian history. In any event the result is certainly most entertaining. Never has the French period of Canadian history been treated in anything like the same interesting manner while resting at the same time upon the bedrock of sound historical data.

After describing the explorations of Cartier and Champlain and the slow growth of the Colony down to 1668, Dr. Newbigin gives, in chapter vii., a most original account of the "Motives and Means of French Expansion." She points out how the efforts of the French to form new alliances behind the Iroquois were checked throughout by the efforts of the Iroquois "to extend their own hunting-grounds at the expense of the tribes allied to the French" (p. 123). The result of course was that the French "advanced into an area too extensive for effective occupation" (p. 127). Although "it was La Salle's misfortune that so many of his schemes were in advance of the times" (p. 137), yet it was also true that "he was trying to do alone what the Hudson Bay Company, with much larger resources, did much later in the north."

Another brilliant chapter is No. xi. on "A New French Policy and an Inconclusive War." "Throughout the French period," we are told, "Montreal was only a postern gate through which small parties of traders, missionaries, and explorers sallied forth, followed intermittently and reluctantly by officials and soldiers always liable to be recalled on an alarm. Obviously the lands reached in this fashion could not be held, once the antagonism of the English had been thoroughly aroused" (p. 217).

Illuminating comparisons are also made between the English and French ways of doing things, such as the loopholed trading station of Fort Oswego in 1727 and the massive French fort at Crown Point built in 1731 on definite English territory, and between the English method of settlement by which small parties pushed out into the apparently illimitable backwoods and the French system of *coureurs de bois* living more or less with the Indians.

Dr. Newbigin's description in chapter xii. of the fundamental problem whether the Central low plains were to remain hunting grounds or were to carry a settled agricultural population is also most illuminating. In fact, in many ways this is one of the best chapters in the book, being comprehensive, clear, and accurate.

Dr. Newbigin's conclusion is that "while man can modify to some extent the lands in which he dwells, in other respects he must follow where nature leads" (p. 284). With regard to New France, "The history of French Canada was a story of ineffective advances into the surrounding wastes from a more or less static centre, and its fall was the result of the attack on that centre by a power strong on the sea, the element to which Canada had such limited means of access" (pp. 269–270).

The illustrations and maps add greatly to the pleasure of reading this interesting work. The only errors noted are one or two mis-spellings in the Table of Contents, which was evidently not drawn up by the author.

H. P. B.

Pedro de Valdivia, Conqueror of Chile.— R. B. Cunninghame Graham. London: William Heinemann, Ltd. 8½ × 5½, pp. 220. 15*s. net.*

Mr. Cunninghame Graham has, this time, taken for his theme the work of the Spanish conquistador Pedro de Valdivia, who, following the ill-fated old hero Almagro, succeeded in holding militarily, and in settling at least the central part of, what is to-day the Republic of Chile.

The story of Valdivia's endless efforts, and of his poor rewards, makes no such glowing and moving relation as, for example, that of the conquest of Mexico; for here was no permanent civilization, no shining cities, and no wealth to repay toil and exile; nor was there peace and plenty when the sword was turned into a ploughshare. The settlers struggled perennially, with none but the Santiago and northerly regions secure from attack, against the relentless hostility of the nomad Araucanians; stories of outpost forts burned and settlers murdered or carried away to an unknown fate are repeated again and again in the records of long periods in Chilean history; and the historian, who has always admired the Araucanian for his resistance, is apt to ignore the courage of the would-be European settler. Mr. Cunninghame Graham scarcely does justice to Valdivia's qualities as an organizer and peopler of the land in his charge; but he has done good work in translating and presenting the five extant letters of Valdivia to the Emperor Charles V.

The Distribution of Bird-life in Ecuador: a contribution to a study of the origin of Andean Bird-life.— **Frank M. Chapman.** (*Bulletin* of the American Museum of Natural History, vol. 55.) New York. 1926. $9\frac{1}{2} \times 6\frac{1}{4}$, pp. xiii. + 784. *Illustrations and Sketch-maps.*

Mr. F. M. Chapman, Director of the Division of Zoology and Zoogeography in the American Museum of Natural History, has edited another of the Bulletins for which that great institution is so deservedly famous. Volume Fifty-five, 'The Distribution of Bird-life in Ecuador,' is the proper continuation of a similar volume on the neighbouring country of Colombia. The task which these naturalists have set themselves is "to ascertain the effects on the distribution and evolution of bird-life of the elevation, in comparatively recent geologic times, of a mountain system, the central base of which lies near the equator while its summits reach perpetual snow, the wings extending continuously to the Temperate Zone at the south and, with some breaks, to the same zone at the north." Mr. Chapman points out that a large area of Andean Ecuador is imperfectly mapped and that geologically there is still a vast field for exploration. The means at the disposal of the American Museums make British mouths to water: the methods and the results of the disposal compel admiration. A. F. R. W.

AUSTRALASIA AND PACIFIC ISLANDS

Life and Laughter 'midst the Cannibals.— **Clifford W. Collinson.** London: Hurst & Blackett, Ltd. [1926.] 9 × 6, pp. x. + 288. *Twenty-four Illustrations.* 18*s. net.*

The Wreck of the "Tropic Bird" and other South Sea Stories.— **Frank Burnett.** London: Sifton, Praed & Co., Ltd. 1926. $9\frac{1}{4} \times 5\frac{1}{4}$, pp. 113. *Illustrations.* 6*s. net.*

Neither of these two volumes can be regarded as a book of reference. 'Life and Laughter 'midst the Cannibals' is a popular work, so popular, in fact, that one is tempted to assume that the author took as his model 'Three Men in a Boat'—to say nothing of the cannibals; and indeed not much is said of the cannibals, except as servants or customers of the white man, speaking pidgin English, and providing food for laughter. The author has a lively style, and those who are tired of the romance and the ethnography of the Pacific may find relief in his fun, if they can overlook his facetiousness. He would certainly disclaim any intention of writing for highbrows, though even some of these may be willing to accept "black fella mary along shovel" as

an alternative title for the Queen of Spades. To winnow the wheat from the chaff must be left to those whose interest in the Solomon Islands quickens their enterprise. It is certainly a book that can be read with amusement, and it contains information that is of value.

Mr. Burnett's book is very different, both in manner and in matter. Nearly half of the slender volume is taken up by an account of the voyage and eventual wrecking of the "blackbirding" schooner *Tropic Bird* in 1893. The vessel was in the first place unhappy in its experiences with the Solomon Islands natives, a portion of the crew being massacred off Malaita. The ship was afterwards cast away on the Indispensable Reef, which is submerged even at low tide, and then followed a two months' struggle against heavy odds, with eventual rescue. In spite of a halting and precarious literary style, the author tells the story with some effect, and it seems probable, though it is not stated, that he was one of the castaways. Most of the rest of the book is devoted to the characters and doings of "gods and demons" of the South Seas, either as described to the author by natives, or constructed from data obtained in Fiji and elsewhere. There are interesting points in these chapters, together with some shark, and "shark-god," stories which were worth recording. A final chapter gives an account of the making of mats and bark cloth in Pacific Islands, though the description is too generalized to be of much value.

H. S. H.

MATHEMATICAL AND PHYSICAL GEOGRAPHY

Field Astronomy for Engineers and Surveyors.— David Clark, M.A., B.Sc. London: Constable. 1926. 7½ × 5, pp. viii. + 164. *Illustrations.* 10*s.* 6*d. net.*

As the author remarks in his preface to this little book, it is largely a reprint of chapters i. and ii. of his 'Plane and Geodetic Surveying,' vol. **2**, 1923. It is intended as a reference book for those whose practice of field astronomy is occasional, and their knowledge therefore somewhat rusty. It is also designed as a text-book for students of Surveying and Elementary Geodesy.

There are three chapters, dealing respectively with Principles, Instruments, and Observations. The chapter on instruments is clear and concise, and read in conjunction with the instruments themselves most useful. But it is a pity that no mention is made of modern types of theodolites, such as the "Wild" and "Zeiss," which will probably take the place of the older patterns before long. The whole book is well arranged, being divided into paragraphs under appropriate headings; the worked examples, as well as the questions and answers at the end of chapters i. and ii., enhance its value. There is a good bibliography for inquirers after further information, and three useful tables. The table of contents and index are full and clear.

The price of this useful little book is open to criticism. At half a guinea it is the type that an unscrupulous friend will borrow and forget to return.

K. M.

Adjustable astral planisphere for latitudes 40° (80°) N. to 10° N.: accompanied by brief explanatory instructions.— J. C. Clancey, I.S.O. Bombay: "Times of India" Press, and other agents. [1926.] 15 × 14. *Rs.*2.

For surveyors and others interested in stellar observations it is frequently desirable to know, in a general way, what stars are above the horizon at any time, and their approximate positions in the heavens; and for this purpose there could be nothing better than a suitably mounted celestial globe if it were

not so bulky and inconvenient to carry about. The next best thing is doubtless a planisphere, but as ordinarily designed these are only serviceable for the few special latitudes for which they have been constructed.

Mr. J. C. Clancey, I.S.O., who for many years has been connected with the Survey of Burma, and has published several works, including a volume of tables, for the use of surveyors in that country, has lately brought out an improved form of planisphere which can be easily made to suit any latitude. It consists of a circular polar-equidistant star chart, around the circumference of which are given the months and days of the year, and which is centred to revolve upon another circular disc, of slightly larger diameter, upon the circumference of which the hours are marked. Covering these two discs, and fastened to them at the upper edge, is a sheet of cardboard upon which has been drawn the curves for the apertures representing the horizons at various latitudes, so that instead of the planisphere having one fixed aperture for a definite latitude, it can be made suitable for any latitude by passing a knife round the curve line corresponding to that latitude. These curve lines are drawn for every 5 degrees, and it would of course be easy to follow the curve round for any intermediate latitude. The present "Adjustable Astral Planisphere," as it is called, is especially made for latitudes 10° to 40° N., but supplementary curves are given on a sheet of tracing cloth, for latitudes 40° to the North Pole.

The scheme seems a good one, and should bring the planisphere into more general use; there is room for improvement in the construction, however, especially as regards the star map, which might easily be much clearer.

E. A. R.

Enzyklopadie der Erdkunde. Paläogeographie.— Edgar Dacqué. Paläogeographische Darstellung der Theorie der Kontinentalverschiebungen.— **Alfred Wegener.** Leipzig und Wien: Franz Deuticke. 1926. 10 × 7, pp. viii. + 196. *Thirty-one Text-figures. G.M.*10.

This book consists of two independent essays upon the geography of the past by two independent authors. Professor Wegener's contribution, however, is no more than a short summary of his views appended at the request of the editor of the series to which the volume belongs. It occupies only sixteen pages, but it is enough to indicate the difference in the attitudes of the two authors. Professor Dacqué is impressed with the difficulty of the subject and sees no certainty amidst the multitude of conflicting views; for Professor Wegener there is only one view and no uncertainty. Professor Dacqué attempts no cartographical reconstructions of the geography of the past; Professor Wegener gives several, and adds a diagram showing the changes in latitude of several town-sites since the Carboniferous period. In short, Professor Dacqué is still looking for the truth: Professor Wegener has no doubt that he has found it.

Professor Dacqué's work is not intended for the specialist, but for those who wish to get a general view of the subject. He is concerned with principles rather than with results. His aim is to place the problems fairly and clearly before the reader and to explain the methods by which they have been, or may be, attacked. He conscientiously endeavours to keep his statements free from bias, and on controversial matters he seldom expresses an opinion of his own. His attitude, in fact, is that of a judge summing up before a jury. It would be interesting to know what he thinks of Wegener's theory. In a little popular book published in 1919 he was inclined to look to it as the probable solution of

many puzzling problems. In the present volume he is neither an opponent nor a supporter.

At the beginning of each of his sections Professor Dacqué gives a useful bibliography. The references, however, are chiefly to German publications, and much interesting work in English and French receives no notice. No doubt the book was to be kept within fixed limits, and was intended primarily for German readers. P. L.

An Outline of Plant Geography.— Douglas Houghton Campbell. London: Macmillan & Co. 1926. 9 × 6, pp. ix. + 392. *Illustrations.* 17*s.*

The author of this profusely illustrated book disarms criticism in his preface by stating that he is "in a way, an amateur," and "can hardly lay claim to rank as a plant geographer." He goes on to say that his book is intended for the general reader interested in the study of plant distribution, also as a book of reference for botanists, "or as a text in classes studying the general subject of plant geography." We are concerned here only with the first and last of these three groups of prospective readers, and have no hesitation in saying that the first is most likely to gain from the perusal of the book. Professor Campbell has travelled widely, particularly in tropical and warm temperate regions, in search of botanical material, and has kept detailed notes of his observations everywhere. Some of his descriptions of areas of rich vegetation, in particular those of some of the great botanical gardens of the world, are vivid and striking, and his constant comparisons between conditions in the regions visited and those in his own State of California are especially interesting to English readers. As a supplement to existing text-books in the English language—still too few—his book should also be noted by students; but it cannot be regarded as in any sense a text-book.

If, as is usual, plant geography is defined as the study of plant communities in relation to the habitat factors, then the book does not in the strict sense deal with this subject at all, but merely with floral regions, a different topic. Even so the treatment is not systematic, for no attempt is made to characterize the regions by giving concise accounts of the endemic species, genera, or families. Repetitions are frequent; the treatment of climate and relief is perfunctory in the extreme, and many will be tempted to apply a harsher term to the index. Composition and punctuation are so careless as to leave doubt in some cases as to the meaning intended, and many paragraphs read as if they had been transcribed from rough note-books without adequate revision. No attempt seems to be made to define technical terms which might offer difficulty both to the general reader and to the college student. There is no list of illustrations, and some of these are so indefinite as to be almost valueless. But, we may repeat, taken for what it is, essentially an account of personal observations on the floras of many parts of the globe, the book fills a useful place.

Visitors from this country to North America who found their first journey in a "street-car" a nightmarish experience, will be interested to learn that Professor Campbell regards chewing gum as "one of America's noblest products." The assertion in the same sentence that chicle, its basis, is derived from some of the "many important *fruits* of the Amazonian region" is but one instance of the dangers of the author's habitual slackness of phrasing.

M. I. N.

HUMAN AND HISTORICAL GEOGRAPHY

National Frontiers in Relation to International Law.— Colonello Vittorio Adami, translated by **Lieut.-Col. T. T. Behrens, R.E.** Oxford: University

Press. 1927. 9¼ × 6½, pp. viii. + 127 + xi. *Frontispiece and Sketch-maps.* 10*s.* 6*d. net.*

Boundary Commissioners fresh from their task of demarcation generally have something to tell us of the troubles they have had in interpreting the ideas of those who framed the treaty of delimitation, and who described, on paper, with a wealth of topographical detail, the boundary in question. To get an idea of what delimitation should aim at, how much it should leave to the boundary commissioner and how it should be put down on paper, we have had in the past to turn over these accounts one after another. In one of them we may find the difficulties of the " median line " of a stream, in another perhaps the relative merits of the watershed and the crest—but so far there has been no general summary or text-book that a commissioner may carry in his pocket to consult in the many difficult questions he has to solve.

However closely two bargaining powers may attempt to describe a boundary on paper, there will always remain much to decide on the ground. In fact, the history of boundaries, generally, shows far more numerous and serious differences of opinion due to over-detailed delimitation than to the disagreements on the ground of responsible commissioners. The history of our own boundaries bristles with examples of this sort. Boundary commissioners, in fact, should not only " demarcate," they should " delimit " too, and any treaty which does not leave licence for their delimitation in detail is singularly unwise. Since the war we have had one boundary after another to consider, and the need for a commissioners' text-book has become more apparent day by day. Colonel Behrens' translation of Adami's book comes therefore singularly *apropos*.

In a series of short concise chapters Colonel Adami describes the various types of frontiers, and contrasts their merits and dangers. His illustrations are mainly drawn from continental history, but they can all be paralleled in our own experience and will be paralleled again. Interesting chapters deal with sea frontiers and with the air frontiers of the future. The chief criticism one may make is that the subject is treated perhaps too logically and too little humanly. That defect is however remedied by Colonel Behrens' own contribution in an appendix " on practical questions."

The securest frontier is obviously that one which gives the greatest satisfaction to all and which removes cause for local friction. There is, for example, on record the case of a boundary so drawn as to divide, somewhat arbitrarily, the lands of a West African tribe. With many mysterious rites the tribe in question uprooted the boundary pillars and planted them again so as to include the whole within British territory. It was a compliment but a troublesome one, and a proper award should have made it unnecessary. These human aspects of delimitation and demarcation on a watershed boundary are Colonel Behrens' text, and are a welcome complement to Adami's colder reasoning.

A fairly full bibliography and a well-compiled index finish off the book, which is well bound and handy in size.

All the boundaries we have to consider are not however international, and the same mistakes (almost all of geographical origin) are to be found in tribal and district questions as in international. This book should, then, find a wide audience in colonial administrations and survey departments as well as amongst boundary commissioners, and, one hopes, may even find its way to the tables of those who, generally on inadequate topographical evidence, have to discuss the preliminary political delimitation. H. S. L. W.

Cotton and its Production.— **W. H. Johnson**. London: Macmillan & Co. 1926. 9 × 6, pp. xxviii. + 536. *Maps and Diagrams.* 30*s. net.*

Here is a book which imposes itself on you whether you will or not; and, in doing so, it challenges you to judge it from a corresponding altitude. It greets you with an Introduction by Sir Wyndham Dunstan, a Foreword by Sir William Himbury, and a Note by the author; it has seven pages of Contents and four of Bibliography, a score of attractive coloured maps and a number of black and white diagrams, and an aggregate of 558 pages; it weighs 42 solid ounces, and it costs 30s. net.

This is very imposing. Professor Dunstan's authority, especially in the matter of cotton, is enough by itself to make one think at once of buying the book; Sir William Himbury, besides his own tale of good work in many lands, carries the whole weight of the British Cotton-growing Association behind him; and the publishers, as one expects of the Macmillans, have turned out a book really attractive to the eye.

And yet a preliminary "run" through the book left one unimpressed and even somewhat seriously in doubt—doubt not only as to what readers wanted just such a book, but also as to the trustworthiness of the book itself. Amongst the author's acknowledgments the name of Professor Todd does not appear, *nor in the Bibliography;* even the 1921 Report, which he edited, is omitted from the list of Official Reports. The index is even more unsatisfactory. Seven pages of Contents may be an easy excuse, but are no compensation, for a *four-page* index. A geographer may reasonably want to look up some special place, *e.g.* Hubbli, Nantungchow, Torreon, La Chisa, Resistancia. He will get no help from this index, nor from the seven pages of Contents.

Nor can the book be praised from the geographical standpoint, for some of the geographical details are very carelessly handled, even if they are not actually incorrect; and this is true of all parts of the World, though much less so about those for which there is an abundance of published material well documented and correlated.

On p. 226 the Russian Turkestan cotton area is described as "east of the Caspian Sea, north and west of the Himalayas, and south of latitude 43° N." In casual conversation, we may say that one place is west and north of another when we mean that it is west of the longitude and north of the latitude of the other. But is it pardonable to describe a cotton-growing area as east of a sea, *i.e.* an apparent source of humidity, when you mean 800 miles east of it, 500 of them over one of the starkest deserts in the world? The passage goes on to say that this is the most northerly cotton area in the world excepting some districts in China and Korea. But the author's own maps (pp. 219, 225) show cotton growing 200 miles farther north along the Sir Daria than in Chihli, though they don't make it clear that the Chihli cotton is too short to be spun at all!

South America, in spite of all Mr. Pearse's admirable work on it, is treated in a very wooden and unintelligent way. The whole of Brazil is described as in one "tropical and subtropical zone" (p. 192), and then this is divided into three so-called *climatic* zones, which are decided by temperature only. On the other hand, the continuous riverine lands of what is persistently called the *San* Francisco (as though the area was not Portuguese) are not treated as one "zone," though the most important factors are the irrigation and the transport supplied by the river, and though the upper basin is as distinct from the lower as a cotton-growing area, as it is from the Tieté basin. In a similar way, we

are told (p. 364) that the mass of the Colombian cotton is grown near Barranquila, but "a small quantity is also grown in the Goajira Peninsula." Surely the word "peninsula" might have suggested the truth—that it is in the even climate of Goajira that Colombia grows far the most important part of its crop, the famous "Sea-island." Again, in the case of Peru we are told that "during the summer fogs occur which occasionally result in rain, but the precipitation is of no importance" (p. 369). But is the relative humidity also of no importance? There is no reference to it, though we are told that "the temperature is moderated by Humboldt's current"—another rather curious wording.

The treatment of African areas is better, but the details are still rather apt to be misleading. For instance, Ashmouni, as it is called, is quite rightly praised, and its rapid extension in Upper Egypt is noted (p. 169); and at the same time it is admitted that over two-thirds of the total cotton area is in Lower Egypt, where Ashmouni only occupied 13·3 per cent. of the area in the latest year quoted by Mr. Johnson—1921. But the unwary reader would never gather that owing to its short staple Ashmouni cannot be used for some purposes at all. A rather similar misconception may result from the pages on the Union of South Africa (p. 269 and the map opposite). The map distinctly suggests that the most important areas are those of Waterberg and Swaziland, followed by the Spelonken; the text, based on 1920 (!) results, suggests that Natal is the most important. On p. 270 Rustenburg is associated —wrongly—with the Waterberg as one of "the most promising areas," but neither Barberton nor Ngotsha is mentioned at all. Rustenburg gives 40 per cent. of the crop, but Ngotsha (not on the map) gives 20 per cent., and Barberton 17 per cent.

The reviewer would suggest that the word used by Sir Wyndham Dunstan —encyclopædic—really betrays the weakness of the book, at all events from the purely geographical standpoint. For it was really an impossibility to cover satisfactorily all the intricate and multitudinous aspects of the subject in a single volume by a single hand. L. W. L.

Pero Tafur, Travels and Adventures, 1435–1439.— Translated and edited with an Introduction by **Malcolm Letts.** The Broadway Travellers. London: Routledge. 1926. 9 × 6, pp. xvi. + 262. *Maps and Illustrations.* 12*s.* 6*d. net.*

The new series of "The Broadway Travellers," of which this is the first volume, is designed by its editors, Sir Denison Ross and Miss Eileen Power, to contain translations and reprints of interesting books of travel which have hitherto been inaccessible in English or have been unduly neglected. Pero Tafur's work was an admirable choice with which to open the series, for in its importance and interest it deserves to stand high among the narratives of mediæval travel. Only a single eighteenth-century manuscript copy is now known to exist in Spain, and even this is imperfect; but the researches of Spanish scholars have cast some additional light upon the life of the author, and he is shown to have been a man of some importance in his native town of Cordova, and to have lived there until his death in 1484. His travels were undertaken between 1435 and 1439, when he was between twenty-five and thirty years of age, but he does not seem to have completed his account of them until after the middle of the century. The book can never have had an extensive circulation, and it had to wait for its first appearance in print until

1874, when an edition was published in Madrid by Jiménez de la Espada. It is this version that Mr. Letts has now translated into English for the first time.

Tafur was essentially a man of the middle ages, and the world in which he travelled was still the restricted centripetal one that looked inwards to Jerusalem as its hub. There is hardly a hint of the Renaissance in his pages, and men's thoughts still turned to the long struggle between Christendom and Islam as the dominant factor in the world. As one of possibly Moorish descent who claimed to have the blood of the Palæologi in his veins, Tafur was well fitted to give us a picture of the protagonists in the last conflict round the corpse of the East Roman Empire. He met most of the great men of his time: the Grand Turk, Amurath II., the Sultan of Egypt, the Emperor Albert II. of Hapsburg, the unfortunate John VIII. Palæologus, Pope Eugenius IV., the degenerate descendants of the Comneni, and so on. Each of them he sums up in a few well-chosen words, and these character sketches add greatly to the interest of the narrative. The Spaniard was a much shrewder observer and much less credulous than the pilgrim travellers of earlier centuries, who have left us narratives of their visits to Jerusalem and the Holy Places. He was a good Catholic, as became a Spaniard, but he had more interest in politics and commerce than in mere devotional sight-seeing, and his comments frequently cast a light on the movements of world trade in his day that lends considerable historical value to the book.

Tafur not only visited the Near East and the countries round the Mediterranean, he also journeyed into the Low Countries where Philip the Good was building up the most stable and prosperous state of the time. He went through Germany, Bohemia, and Hungary as far to the north-east as Silesia, and gives us a graphic picture of Breslau, the great and wealthy city on the Oder, where he tells us that the people could expend more money upon furs and spices than in half the world besides because they derived so much silver from their mines. Everywhere he met friends whom he had encountered before upon his travels, and we gain from his pages a vivid impression of an intimacy of intercourse between all parts of Christendom that can hardly be matched in our own time. His comments upon the facilities afforded by the system of international finance, whereby he was able to obtain bills of exchange payable in any part of Europe, have a curiously modern flavour, and enable us to realize much that has been slurred over or neglected by other travellers.

The translation seems to have preserved the clarity and simple directness of the original, and it is eminently readable. The illustrations are chosen from a variety of fifteenth-century manuscripts, and are of intrinsic interest but not directly connected with the text. The production of the book is all that could be desired, and the editors and publishers are to be congratulated on their effective use of red and black in the title page and other preliminary matter. The standard of the new series has been set high, and if the other promised volumes come as near to it as does the first, we may look forward to a really valuable addition to the literature of travel. A. P. N.

Sir Francis Drake's Voyage Around the World, its Aims and Achievements.— Henry R. Wagner. San Francisco, California: John Howell. 1926. 11 × 7½, pp. x. + 543. *Maps, Charts, and Facsimile Reproductions.* 45*s. net.*

This is a large exhaustive work on Drake's voyage round the world, put together with infinite labour and with an honest determination to arrive at

an unassailable verdict on the available accounts of that achievement. In fact, no document and no map or plan seems to have been overlooked by its indefatigable author. Mr. Wagner also evidently considers that his efforts entitle him to express decided opinions, and he has had no hesitation in stating them on all points, controversial or other.

As in the case of every other work of the nature of that before us, this book presents two aspects—statements of facts collected with ungrudged trouble, and judgments on the facts collected. As regards the collection of his facts Mr. Wagner's labours are beyond praise. He does not appear to have left anything out when considering the voyage in twelve chapters of his book. He describes at length its objects as he sees them and the preparations for it, and the journeys across the Atlantic to both coasts of the American continent round Cape Horn from Brazil to California, thence across the Pacific to the Moluccas, and thence home. He then gives an account of what happened after the return home, and adds to Drake's voyage the story of the later Fenton expedition. The statements made in the course of the account of the voyage itself are supported by an examination of no less then twenty-two "texts," English and Spanish, and about seventy maps, charts, and illustrations. Four portraits of Drake are also given, besides eight appendices, and an immense number of notes in very small print to the Introduction and the twelve chapters. Many of these notes are very valuable and must have demanded great research: *e.g.* those on Drake's age (p. 457), Juan the Greek pilot (p. 477), Cape Mendocino (pp. 490 ff.), Drake's Bay (p. 495), Spanish Money in the sixteenth century (pp. 506 f.), Drake's portraits (p. 508), and others. There seems to be no doubt that Mr. Wagner has done his best to read and examine all available sources of information.

The maps which have been so lavishly reproduced in this book have in many cases been so reduced from the originals and so printed that they cannot be read even through a magnifier. They are, in fact, blurred, which is a very bad defect in map-making. The reviewer tried to find a place in the neighbourhood of Celebes I., which interests him especially, but in two maps the names thereabouts are not legible.

It has long been known that the geography of Drake's journeys in this voyage presents many difficulties, but as regards that part of it to South America and thence as far as California on the west coast, Mr. Wagner's work has gone far to settle practically all points, and where he differs in identifications from his predecessors, it may be fairly taken that he is right. When, however, he is dealing with the Pacific Ocean and the Malay Archipelago, the difficulties are of such a nature that the reader will do well to use his own judgment when comparing Mr. Wagner's views with those of others. There is here still plenty of room for argument.

Passing from the facts of Drake's great achievement, as stated in this latest examination of it, to the judgments expressed upon details, the situation is, however, on a different plane. Here the author pits his own mind against those of his predecessors, and despite the force with which Mr. Wagner's opinions are sometimes stated, the reader must here too use his own judgment. In the present writer's view he has not always appreciated Drake's difficulties, or projected himself sufficiently into the mind of a man of action of Drake's country and time. However, that again is a matter for argument.

It is not possible in a short notice of a great book like this—for it is a great book—to go into any of the very many points of geography, history, and human nature raised in it, and it must therefore suffice to assure students of

Drake and his period that they will find here a deep mine of information which may always be worked with profit. R. C. TEMPLE.

The Travels of Marco Polo the Venetian.— With an Introduction by **John Masefield.** London: J. M. Dent & Sons. 1926. 8 × 5½, pp. xviii. + 462. *Map and Illustrations.* *7s. 6d. net.*

A handy version of Polo, better suited to the needs of the general public than the bulky volumes of Yule and Cordier, is certainly called for, and at first sight the present volume might be thought to supply the want. But a closer inspection leads only to disappointment. Although the book itself gives no information whatever as to the version adopted or the authorship of the extensive notes which appear on nearly every page, we soon discover that it is merely a reprint—on larger and thicker but otherwise inferior paper—of the version issued in 1908 as one of the volumes of "Everyman's Library." This in itself would be no ground for complaint, but unfortunately the "Everyman" edition was hardly suited to the needs of even the most uncritical public. It, too, made no definite statement as to the origin of the version used, incidental references in the notes to changes of Marsden's text being the only hint that this antiquated version (based on an inferior text and published in 1818!), together with the bulk of the original notes, had been followed almost word for word. Marsden's elucidation of the narrative was no doubt excellent for the time in which he wrote, but its reproduction at the present day with no attempt to correct or extend it from the exhaustive researches of later scholars leads to results little short of ludicrous, as when travellers or writers of the early nineteenth century are referred to as the most recent authorities—and this without a hint that the notes were not specially written for this edition. Many questions left unsolved by Marsden, but since fully elucidated by Yule, Cordier, and others, remain as problems still, while actual mistakes of identification are still uncorrected.

The intrinsic interest of the narrative is such that it will find readers in any form, but we cannot but regret that the substance of the present volume falls so far short of what might have been expected of publishers of repute. The illustrations, which did not appear in the "Everyman" issue, are attractive and well chosen, and are some set-off against the other drawbacks referred to.

GENERAL

Pursuing the Whale.— **J. A. Cook.** London: J. Murray. 1926. 9 × 6, pp. x. + 344. *Illustrations.* *18s. net.*

A number of books on whaling have been published recently and have dealt mainly with sperm whaling or modern finner whaling. This volume by a whaling master of many years' experience treats chiefly of right or bowhead whaling in Alaskan waters, an occupation which is now practically extinct, but at one time employed several hundred American whaleships. Capt. Cook writes only of his personal experiences, and attempts no comprehensive history of American whaling in Arctic waters. In some respects that is a pity, since a history of this industry by a man who understands it is needed, just as a full history of English and Scottish whaling has still to be written. On the other hand, the book is all the more vivid for being an account of personal adventure. For several years, following the custom of American whalers, the author wintered at Herschel Island, and the stories of those winters are among the best chapters in the book. It was frequently no easy task to get enough fresh meat for all on board, or to keep restless crews in hand. No ship-master, however, was better suited than an American whaling skipper for facing and overcoming

difficulties: by usage and tradition he was schooled to lead and command. The lighter side of the whaler's life is seen in successful attempts to outwit harbour authorities and to deal with deserters. Some account is given of the actual whale hunts, but little is said about the whales and their habits, and something might have been added about the construction and peculiarities of build of the fine old ships engaged in whaling. Capt. Cook might no doubt have made more of the excellent material at his disposal, but he has produced a book that never fails to be informative and is generally interesting, though in places rather overburdened with details of ships' courses, weather, and ice-movements. There are many good illustrations, but the absence of any sort of map is a serious drawback in a book that deals with an out-of-the-way corner of the world. R. N. R. B.

The Venturesome Voyages of Captain Voss. New edition. London: Martin Hopkinson & Co. 1926. 8½ × 6, pp. xvi. + 326. *Illustrations and Maps.* 12*s.* 6*d. net.*

It is now many years since Captain Voss achieved fame by sailing from Victoria, B.C., to London *viâ* New Zealand, South Africa, and Brazil in a 3-ton yacht. His boat, the *Tilikum*, was an Indian cedar-wood dug-out, strengthened with oak frames and made more seaworthy by heightened bulwarks and the addition of a keel. She had a small cabin and a cock-pit for steering, and was rigged with three masts carrying four small fore-and-aft sails, giving a total spread of 230 square feet of canvas. The *Tilikum* was 38 feet long, and when loaded for sea with ballast and three months' stores, drew about 2 feet. Captain Voss and his mate, who was changed several times during the voyage, were the whole crew. It was certainly a venturesome voyage, but Captain Voss had many years' experience in small sealing vessels behind him, and he stoutly maintains that a small boat, if properly handled, is perfectly safe in any weather. In heavy seas he never attempted to run, but always hove-to under a riding sail and a sea-anchor. Thus he weathered many gales in comparative comfort and, in his opinion, safety. A number of technical points in seamanship are discussed in appendices to the story. In addition to the voyage of the *Tilikum* the book also recounts the shorter and earlier voyage of the 10-ton *Xora* from San Francisco to Cocos Island and Callao, and the short but thrilling voyage of the *Sea Queen* from Yokohama, during which the boat was dismasted and turned turtle during a typhoon, but nevertheless returned to port. The open-sea passages are the best parts of the book. Experiences ashore are occasionally amusing but generally trivial. The first edition was published in Yokohama in 1913, but has long been out of print. R. N. R. B.

All Round the Mediterranean.— Warren H. Miller. London; New York D. Appleton & Co. 1926. 7½ × 5, pp. 172. *Illustrations.* 5*s. net.*

This should be of great comfort to those setting out uneasily on the round trip of the Mediterranean. They will be assured that at most ports tugs will put them ashore, motors will be provided by the agencies, and it will be quite easy to " cover the principal sites in the time." And there is this book, handier if less exact than Baedeker, to tell them as much as they will probably want to know. The writer's historical notes appear confused in places, and there are also misprints, but Mr. Miller's enthusiasm is unbounded for what, in appreciation of the inheritance of Hellenic culture, he calls " Our Sea."

Collins' Explorer Series.— Edited by **Sir Harry Johnston, G.C.M.G.** The Old Navigators; The Old Explorers; 19th Century Explorers; Modern Travellers; Pathfinders of To-day; Trading Companies. London: Collins. [1926.] 7 × 4½. *Illustrations.* 1*s.* 6*d. net each.*

This series covers fairly comprehensively the history of exploration from the Age of Discovery to the beginning of this century in a number of interesting and simply written biographical sketches. It originally appeared some years ago, but the present issue has largely been re-written and brought up to date. As an introduction to the subject, they should be valuable, for though most emphasis is laid upon the incidents of voyage and journey, the general significance of each man's life-work is made clear. It is a little surprising, considering the total contribution of the Dutch to the knowledge of the globe, that no explorer of that nation is included. There are few sketch-maps, but numerous portraits.

The Largest Ships in the World.— **V. S. Fellowes Wilson.** London: Crosby Lockwood & Son. 1926. 10 × 6½, pp. xii. + 226. *Illustrations.* 10*s.* 6*d. net.*

The landsman, after reading this book, should have few questions to put on the construction or navigation of the ocean liner. Its development from the *Great Eastern* to the *Majestic*, methods of building and launching, the latest application of scientific invention to secure the safety and comfort of the passengers, are all described. Nor is the human side of the business neglected. The highly eulogistic style of the author, at times rivalling that of an advertisement writer, detracts somewhat from the enjoyment of the book. The illustrations are profuse.

The Principles and Methods of the Teaching of Geography.— **G. D. Tamaskar.** Jubbulpore: K. L. Bhave, [N.D.] 7½ × 5, pp. 178. *Rs.*1½.

The author is a teacher of geography in India who finds that existing books on the teaching of the subject are not adapted to the wants of his country, and are moreover not practical guides because they "begin their talk in the abstract and end it in the abstract." Only three books on scope and methods escape his criticism on the latter grounds. Mr. Tamaskar's essay is interesting, not for the new ideas it contains, since there are few, but because it shows a lively appreciation of modern geographical teaching, and is not oblivious of the pitfalls that beset the teacher. But there is no particular application to India or Indian needs except in the lists of books. We hope that the book will awake in other teachers in India the enthusiasm for geography which the author clearly has. R. N. R. B.

Geography from the Air.— **E. M. Sanders.** London: T. Nelson & Sons. [1926.] 9½ × 7½, pp. 63. *Illustrations and Maps.* 2*s.* 6*d. net.*

Miss Sanders has produced an introduction to map study of a novel kind. It consists of a number of photographs, most of them taken from aeroplanes, to each of which is attached a simple map or plan on a large scale and a short description of the main features of the topography. A few simpler exercises on each feature are added. The book should prove helpful in teaching young children to understand maps, and there is no attempt to use the maps as texts and read more from them than they show.

THE MONTHLY RECORD

THE SOCIETY

Medals and Awards, 1927.

His Majesty the King has approved the award of the Royal Medals as follows: The *Founder's Medal* to Major Kenneth Mason, M.C., R.E. (Survey of India), for his connection between the surveys of India and Russian Turkestan through the Pamirs in 1913 and his organization and conduct of the Shaksgam Expedition of 1926; the *Patron's Medal* to Dr. Lauge Koch of Copenhagen for his very remarkable six years' exploration of northern Greenland. The Council have awarded the *Victoria Medal* to Col. Sir Charles Close, K.B.E., F.R.S., for his distinguished contributions to the advancement of the Science of Geography; the *Murchison Grant* to Mr. John Mathieson for his surveys of Spitsbergen and for his special studies during his long service with the Ordnance Survey in Scotland; the *Back Grant* to Capt. A. H. MacCarthy for his preparation and leadership of the ascent of Mount Logan, 1925; the *Cuthbert Peek Grant* to Mr. Francis Rodd to assist him in further exploration of the Sahara; the *Gill Memorial* to Mr. A. E. Young for his development of the mathematical theory of Map Projections.

EUROPE

The Hereford Earthquake of 1926.

Dr. Charles Davison gives some notes on the earthquake of 15 August 1926 in the April number of the *Geological Magazine*. It is of special interest to compare it with the strong Hereford earthquakes of 1863, 1868, and 1896, three of the four (1863, 1896, and 1926) having apparently originated in the same twin-foci, the epicentre of one lying near Hereford, that of the other near Ross. The principal shock in 1926 took place at 4.58 a.m. on August 15, the intensity being 7 of the Rossi-Forel scale. A sketch-map of the area affected shows the wide extent of the disturbance, the isoseismal line of intensity 5 running near Manchester, London, and Exeter, while that for intensity 4 runs north of York. Of the four Hereford earthquakes, the latest takes the third place for intensity, that of 1896 coming first. Throughout much of the disturbed area the shock consisted of two distinct parts, the average interval being 2·8 seconds. Dr. Davison concludes that the earthquakes both of 1926 and 1896 originated in the same deeply seated foci nearly below Hereford and Ross, though in 1926 the impulse in the Ross focus was much the stronger.

Agriculture in Kintyre.

A study of the distribution of agriculture in Kintyre by Mr. James M'Clement, which was awarded the Royal Scottish Geographical Society's silver medal in 1926, is reprinted in the Society's *Magazine* for January, 1927. The elevation of the peninsula, rising to 1500 feet, is considerably interrupted at one point only, the V-shaped plain known as the Laggan, with Campbeltown approximately at its apex. Apart from a discontinuous coastal strip, this constitutes the greater part of the lowland, only 12 per cent. of the area being below 100 feet, while about 50 per cent. lies above 540 feet. The Laggan has been recently covered by the sea, and a 100-feet raised beach may be traced almost continuously along the western coast. The transported soil of the Laggan is light loam, tending to sand: the hillsides are also covered with light soils, and peat occurs on the tops. With a mild and moist climate, Kintyre

is the seat of a considerable agricultural industry, though other conditions are not particularly favourable. The nearest railway is at Oban, 60 miles from Tarbert in the north, but there are daily steamer services to the Clyde. The development of agriculture is partly due to the influx of Lowlanders in the seventeenth century, encouraged by the Marquis of Argyle. They settled in the southern half, and reclaimed much land. In the nineteenth century, the profits to be obtained from sheep-raising hastened the depopulation of all but the best agricultural land, and the population declined from 20,000 in 1831 to 15,000 in 1871. The parishes arranged by density of population are Campbeltown (in which the Laggan is included) 5 per 100 acres; Southend 3, and the remaining three, 2 per 100 acres: this is also, as might be expected, the order by cultivated area, low-lying level ground, or alluvial soil. The east coast is especially barren, through its steeper slope, and bad communication. Much along the north-east and north-west coasts is covered with natural wood. Uncultivated areas on the plains, apart from woods, occur where the soil is unsuitable—peaty, as in the middle of the Laggan, or exceptionally sandy, as in the west of the Laggan and the Southend sea-board. In the south the hill slopes are cultivated up to 400 feet, elsewhere to 200 feet. The rotation of crops is a six-year one, of grain, roots, grain, hay, grass, and grass. In the Laggan, both grain crops may be barley; on the hills oats take its place. This form of agriculture favours the raising of cattle on the low-lying farms. Butter, cheese, and cream are exported, but not milk, nor meat to any extent. Sheep are raised extensively on the hills, and with pigs form the most important export. The local woollen industry came to an end in 1907. The proximity of the Clyde area, with its large population, has no doubt stimulated agriculture greatly. A note by Mr. A. Stevens, amplifying the term "dissected plateau," is added.

The Monts-Dores of Auvergne.

A phyto-geographic study of this massif (which includes the highest ground in France outside the Alps and Pyrenees), contributed to the *Revue de Géographie Alpine* (Tome 14, 1926, Fasc. 3) by M. A. Luquet, is of some interest to the geographer as well as the botanist as showing the influence of physical and climatic conditions on the vegetation, and its relationship to that of neighbouring districts. The group forms an ellipse with major axis of 40 km. The foundation consists of granite, with some metamorphic rocks dating from the Lower Carboniferous. In Secondary times it was cut down to a peneplain, but this was profoundly modified by the great volcanic activity of the Tertiary, and later by glacial action, which caused the formation of a large number of lakes, now seen as extensive peat-bogs. This complexity of structure and composition has had a marked effect on the vegetation, which varies extremely in different localities. Climatic conditions too show extreme contrasts. The eastern slopes, below 800 metres, are subject to the same conditions of light, temperature, and precipitation as the Limagne, with sub-continental, or even Mediterranean characters. Above 800 metres we find a region of cloud and mist, with most pronounced rainfall towards the west, and temperature means as on the coasts of Scandinavia. Above 1500 metres a thick snow-cap persists for six months of the year. All the main phytogeographical elements of the Central Massif occur, Mediterranean elements appearing on the eastern slopes, those of Central and Northern Europe in the mountains. But as oceanic conditions of climate predominate, the Atlantic element of the flora is of great importance. Man has greatly modified the original characters by

cutting down forests and substituting meadows and cultivation. But the rigour of the climate has induced the nomadic habit, and with eyes turned outwards to neighbouring regions he has been far from using the natural resources to best advantage, and wide expanses have been converted into barren heath-lands. In modern times energetic Government action has led to reforestation, and as the district has failed to retain its population, a reversion to primitive conditions is in progress. The bulk of the paper is devoted to a detailed description of the various plant-formations, the distribution of which is shown by colours on a large-scale map. The concluding paragraphs discuss the relationships with the flora of the Forez and Southern Cevennes, and emphasize the contrasts between the eastern and western versants. The paper is well illustrated by photographs.

Sand and Mud Banks off the Coast of Schleswig.

A detailed description of the northern part of the "Wattenmeer," which washes the western coast of Schleswig, is given by Mr. Thade Petersen in the *Geografisk Tidsskrift* for December 1926. It is written in Danish, but a German summary is appended and the text is illustrated by a sketch-map. Few coasts present so extensive a medley of islands, banks, and channels as that here in question. The firm coast of the mainland is fringed with a succession of islands permanently above high water, the largest north of Sylt being Römö and Fanö. In the ordinary small-scale maps a continuous belt of water is shown between these and the mainland, in places 10 or more kil. in width, but in reality the greater part of this belt is uncovered at low water, the wide banks (known locally as "Watten") being then traversed only by narrow branching channels or "deeps." By far the greater part of the banks consist of sand, yellow or grey on the surface, but often blackened at a slight depth by sulphate of iron. The most extensive mudbanks occur between Römö and the mainland, fringing the northern part of the island on its eastern side and also the opposite mainland coast near Ballum. Here the deposit of mud has made great progress within the past decade, apparently owing to the building of the Ballum dyke, which has resulted in a change in the mouth of the Brede Au. It is thought likely that in a few years this great mud-bank will form permanent marsh-land. The stratification of the sandbanks has not been carefully studied, but it is known that an old moorland surface with plant-remains exists in places below the Prussian datum level. The tide plays the most important part in moulding the features of this tract. Twice daily the sea invades the whole, but on its retreat it does not follow quite the same course as in its entry, the flood being earlier and stronger from the south than from the north. It is calculated that 700,000,000 cub. metres more water finds its way out each tide by the northern passage than has previously entered by this way.

Economic-historical Studies of Lüneburg and Magdeburg.

Some interesting factors in the development of a North German town are brought out in a paper on Lüneburg by F. Langenheim, contributed to the *Jahrbuch* of Hannover Geographical Society for 1926. It was said that it owed its importance to "mons, fons, pons"—the Kalkberg, which overtopped the surrounding diluvium, the mineral springs, and the bridge across the Ilmenau. Down to the eleventh century, the region along the river formed a frontier "mark" between Teutons and Slavs, and Lüneburg was prominent as a defensive position. Later its importance rested upon the salt deposits, and especially upon the town's situation on the trade routes of Northern

Germany. In this respect it succeeded to the *rôle* of Bardowitz. The main line of traffic in this area in mediæval times was the North Sea–Baltic coastal route: interrupted by the peninsula of Jutland it turned inland, having thus to cross the Elbe. The route from Bardowitz to Lauenburg, lying approximately along the dividing line (40-metre contour) between the lower Elbe plains and the hilly country of the Lüneburger Heide, thus became of great importance. At the same time the Ilmenau offered a good north and south route. When Lüneburg replaced Bardowitz its important export was salt for the Baltic herring trade. In course of time its position was challenged by the growth of Hamburg and Lübeck, but the precious "staple" right it had won, by which all trade from north to south, *e.g.* from Hamburg to Brunswick or Magdeburg, must pass through the town, gave it an advantage. The loss of this right, internal dissensions, competition in the salt trade, the losses of the Thirty Years' War, the development of the Elbe navigation, and the supremacy of Hamburg, all finally caused Lüneburg to sink into the background. It still remains an important centre in the railway network, being still on the connecting link between the industrial west and the east. Industrially, its salt deposits have become the foundation of chemical works, and its limestone for artificial manures, while its relations to Hamburg have enabled it to develop timber and iron industries dependent upon imports. Finally, the advance of agricultural methods has turned the formerly desolate Lüneburger Heide into a fertile area, for which Lüneburg has become the economic centre. The population has doubled in the last sixty years (1925, 30,000). The development of the "Siedlungsbild" is described in detail.

The same volume also contains a full analysis of the economic position of Magdeburg. To some extent its position is similar to that of Lüneburg, though on a greater scale. It is noted that a scheme of railway construction for Germany was drawn up which would have centred on Magdeburg, but the opposition of the smaller states held it up. From the artificial predominance which Berlin acquired later as this centre, Magdeburg has suffered economically.

ASIA

Research in the Persian Gulf.

Attention should be drawn here to a summary, largely bibliographical, of scientific research in the Persian Gulf, by Sir Arnold Wilson, extracted from the *Journal* of the Bombay Natural History Society, November 1926. The several sections, which include geographical surveys, marine and river surveys, geology and zoology, among others, are not rigidly confined to the Gulf, but also include many references on 'Iraq and Persia. This is the more necessary since, as Sir Arnold points out, there is no comprehensive work on the Gulf, and information must be sought in many scattered quarters. This essay was undertaken to show what remains to be done, as well as what has been achieved. On the Arabian coast, in Oman, Musandam, and the Hasa littoral, there is scope for exploratory surveys, and there are likewise gaps on the Persian side, for example in the Mamasani and Boir Ahmadi country. But the need there is for a systematic survey programme rather than for the opening up of new areas. The somewhat chequered history of the marine surveys is given in some detail: political conditions, and the actual loss of valuable survey material, often prevented rapid progress. As is pointed out in the note on meteorology, many observations have been collected by officials resident in the Gulf which have never been worked up. In archæology, botany, geology, and medicine, however, further research is greatly needed. Though Sir Arnold's paper is

not a systematic bibliography—frequently only the names of travellers and students are given—it forms a useful introduction, and should stimulate further efforts.

AMERICA

The Canadian Arctic.

The Report of the Royal Canadian Mounted Police for 1926, which we have received from Inspector C. D. La Nauze, contains much information about life in Arctic Canada, the condition of the native population, and game supplies, in addition to accounts of patrols. In the Eastern Arctic several long patrols were made. The establishment of the farthest north post on Bache peninsula was noted in the *Journal* for November 1926. Inspector Wilcox made a journey from Ponds Inlet down the east coast of Baffin Island to River Clyde and Home Bay. Among the natives he found much illness, mainly pneumonia, though no destitution thanks to the proximity of the caribou breeding-grounds. In his opinion the population of North Baffin Island will be wiped out in ten years, unless medical assistance is supplied. Similar reports were made from Bylot Island, from Port Burwell on the mainland near Cape Chidley, from Cumberland Gulf, and farther afield. It is noted that Eskimo were working outcrops of graphite on Blacklead Islands, Cumberland Gulf, from which 30 tons had been obtained. Two of the patrols recorded in detail describe exploratory work in South Baffin Land. In April 1925 Constable Tredgold left Pangnirtung, Cumberland Gulf, and joined Mr Soper, an American ornithologist, at the head of Nettilling fiord. Having taken a surf boat with them, they were able later in the season to follow round the southern and western shores of Lake Nettilling as far as Koukjuak river. The following year the same constable accompanied Sergt. Wright on a long and arduous journey, 1286 miles in all, from Pangnirtung across the interior to Lake Harbour on the south coast. The route lay by Nettilling Lake, Amadjuak river and lake, and Mingo lake, and thence by the shores of Hudson Strait. The weather was very cold and the going difficult: the country was largely unknown to the guides, the existing maps were faulty, and no natives or caribou were encountered. At one time their dogs had had no food for four days. On the return journey they were more fortunate. It is said that of 550 reindeer landed for stock purposes near Amadjuak in 1921, not one has survived. Another long patrol, 975 miles, was made by Staff-Sergt. Joy from Craig Harbour, Ellesmere Land, to Grethasoer Bay, on the west coast, and portions of the southern Axel Heiberg Land, by Goose, Baumann, and Trold Fiords. During his journey he came across records of the *Fram* expedition left in 1901–02. The ice conditions were good in general, and on the west coast he found the strongest growth of vegetation he had seen in the Arctic, and a region which must be teeming in game, including musk-ox, caribou, and bear. Another journey made by him opened up a route across North Devon Island to the post at Dundas Harbour. The remainder of the report deals with the Western Arctic, with the administration of the country, the preservation of game, the bringing of natives to justice, and the relief of tribes on the point of starvation. The Report shows to what an extent the Eskimo have come to depend for supplies and medical assistance upon the Police and the trading posts, though in general it is noted that the Eskimo who are not in close contact with trading posts, as for example those in the interior west of Chesterfield Inlet, are sturdier and more attractive.

Earthquake of 1925 in the St. Lawrence Valley.

In a note reprinted from the *Bulletin* of the National Research Council (No. 56, Washington, 1926), Mr. Noel J. Ogilvie shows the desirability of co-operation between geologists, geodesists, and seismographers, illustrated by a recent example. On 28 February 1925, a shock of a few seconds' duration was felt in the St. Lawrence valley coincident with a loud roar. Noises were heard as far west as Ottawa, and tremors continued for two weeks. The greatest damage to buildings was done near St. Pacome, Riviere Ouelle, Baie St. Paul, and Shawinigan Falls. Cracks appeared in the crust between Riviere Ouelle and Riviere du Loup, having a maximum length of 150 feet. In order to co-operate as far as circumstances permitted with the Dominion Observatory, a party from the Geodetic Survey relevelled the 114 miles between Riviere du Loup and Levis. A graph is given of the deviations of the 1925 levels from those of 1915. To the Riviere Ouelle the differences can be accounted for by frost action or instrumental errors: thence a gradually increasing drop takes place, reading 0·37 foot at Montmagny. This decreases until at Levis the difference is approximately 0·1 foot. This area of greatest difference occurs in a trough with an average elevation of 35 feet between a 300-feet plateau and a plain of 100 feet elevation. It is noted that seismologists had previously concluded that the fault line had entered the south shore of the St. Lawrence at the Riviere Ouelle trough. If the actual bench marks are plotted, a rise in elevation is shown north-east of St. Pacome and a drop to the south-west. The mutual substantiation of seismological and geodetic conclusions shows the value of geodetic observations before and after earthquakes.

The Cliff-dwellers of South-West Colorado.

A detailed study of the human environment of the Mesa Verde area of South-West Colorado and its influence upon the "Cliff-dwellers" is contributed by Mr. William H. Haas to the *Annals* of the Association of American Geographers, vol. 16, 1926, No. 4. The Mesa Verde, a deeply dissected area of the Colorado plateau cut off by canyons and escarpments, was abandoned by the Cliff-dwellers before the coming of the white man. Mr. Haas emphasizes the fact that these Indians were not separate culturally from the other Indian peoples, but had merely adapted themselves to local conditions—nomadic Indians who perforce became sedentary. The Papagos of Arizona are given as an example of an opposite tendency, where a sedentary people became nomadic. The main cause of this differentiation was the nature of the food supply. In contrast to the Indians of the Plains or of the eastern woodlands, the inhabitants of the Mesa Verde were compelled to produce their own crops, the principal being maize. This required their presence at the proper time for sowing, and constant attention during growth. The character of the country rendering east-to-west travel almost impossible further confined them to limited isolated areas. The Mesa Verde, above average plateau elevation, ranges from 5000 to 8000 feet; the horizontal sandstone strata are broken in places by igneous projections, and particularly by the canyons: these are from 500 to 1000 feet in width, and the deepest are 1000 feet. In the walls of these the cliff-dwellings were built. The area is crossed from north-east to south-west by the Mancos, but in general the drainage is insignificant. The annual rainfall is below 20 inches, distributed very irregularly. The low relative humidity and the nature of the ground also produce the maximum erosion, and the least benefit to vegetation. The northern section carries oak brush and some excellent pasture, but in the more arid south, grasses are scanty, and

vegetation consists mainly of groves of pinyons and some stunted cedars. Under modern conditions, dry farming has been tried without conspicuous success, and the future appears to lie with ranching. Though some slight progressive desiccation may have taken place in historic times, it is difficult to account for the difference between the evident former population and the present. Possibly the advent of the Spaniards just tipped the scales in the Indian struggle for existence. Under the conditions, no individual independence was possible: a fact symbolized by the large communal houses. The necessity for storing water led to proficiency in ceramics, without the use of the wheel, and especially in irrigation. Considerable lengths of canals may still be traced in the river valley. In examining the question of population it must be remembered that crop yields far lower than the present economic limit would be sufficient for Indians, that they used comparatively little water, and that some of their articles of food would be disagreeable by modern standards.

The Desert Route through Southern Arizona.

An historical sketch of, and personal experiences along, a desert route in Southern Arizona is given by Mr. Godfrey Sykes in the *Geographical Review*, January 1927. The route, known as the "Camino del Diablo," follows approximately the United States–Mexico boundary for 160 miles from Sonoyta to the Colorado River at Yuma, across a particularly arid region. It is thought that Father Eusabius Kino was the first to use it in 1699, on his expedition from the Magdalena River settlements to the tribes of the lower Gila river. The dangerous nature of the crossing discouraged travellers until Spanish interest in this area developed towards the end of the eighteenth century. Father Garces followed it in 1772, and again in 1774 with de Anza's expedition. But the great impetus to its use was given by the discovery of gold in California in 1849, and to a lesser degree in 1860. A safe route, with certainty of water, existed along the Santa Cruz and Gila rivers, but as this meant a journey of nearly 400 miles as compared with 230 by the "Camino," the hasty gold seekers plunged, generally ill equipped, into the desert. Along the track there are but two permanent natural water basins, eroded in the rocks, and in 1860 a well was opened at Tule. Altogether hundreds are said to have died of thirst at various times. At present lack of water is less an obstacle to motor transport than the presence of sand-dunes, the difficulty of following the track, and mechanical breakdowns. It is not, however, greatly used now. Mr. Sykes gives examples of the effects of "desert thirst," and describes his own experience on a trip in 1925, with physiological notes. In two strenuous days, one of which included $4\frac{1}{2}$ hours' work at a temperature of 115°–110°, making a track through sand-hills, he suffered a temporary loss of weight of 14 lbs.

AUSTRALASIA AND PACIFIC ISLANDS

Exploration in New Guinea.

We have received from the Lieut.-Governor of Papua some notes on an expedition recently despatched to North-West Papua. The leader is Mr. C. H. Karius, Assistant Resident Magistrate, who is accompanied by Mr. I. Champion, the remainder of the party consisting of two native N.C.O.'s and ten men. The party left Port Moresby at the end of last year. Their object was to ascend the Fly River to its source and then to gain the Sepik valley. They are then to attempt to reach the north coast by the Sepik, or, failing this, will return by their outward route. The Fly was to be ascended for 520 miles by boat, to Lario Bank, where the party, accompanied by carriers, were to land and work round east of the swamps to the headwaters of the Fly or Palmer. This is unexplored country: that to the west has been traversed by Mr. Leo

Austen (see *Geogr. Journ.*, **67**, 434; the sketch-map shows the earlier stages of the journey). On reaching the Sepik, Mr. Karius intended to strike across the Victor Emmanuel Range and again reach the river lower down. If practicable, he would then proceed to Marienburg, on the north coast. Stores for five months were taken. A preliminary report has been received from Macrossan Island on the Fly River.

GENERAL

John Norden.

The acquisition by the Society in recent years of several excessively rare county maps by John Norden lends an interest to anything which can throw new light on the personality of their author. It has long been a matter of uncertainty whether John Norden, the surveyor and topographical writer, and John Norden, the religious writer, were one and the same person. In working at the 'Short-title Catalogue of English Books, 1475–1640,' Dr. A. W. Pollard was led to examine this question, and his paper, read last year at the Bibliographical Society and printed in *The Library*, December 1926, under the title "The Unity of John Norden: Surveyor and Religious Writer," practically sets it at rest. With one exception, none of the topographical or religious works appear after 1625. None of the religious works are sermons, so that their author was almost certainly a layman. The one book published after 1625, 'A Good Companion for a Christian' (1632), proves to be a posthumous work, and supplies a further link in the identification; for the dedication by the younger Norden states that "My deceased Father very oftē suruaied the Kings Lands." Other links can be obtained from a comparison of the two classes of works: thus 'A Pensiue Mans Practise' is dedicated to Sir Henry Knivet, to whom Norden goes out of his way to make a reference in the MS. of his 'Survey of Middlesex.' Similarly 'A Sinfull Mans Solace' is dedicated to Sir Edmund Anderson, Lord Chief Justice, of whom there is also special mention in the 'Middlesex.' A supposed argument for the separate identity of the topographer and theologian had been derived from the discovery at Hatfield of a request from Norden for a pass to pursue his surveys, which stated, "I was by some unfortunatelie mistaken for another of my name," and it was thought that this might have been the religious writer; but whoever this second John Norden was, the above evidence points to the identity of topographer and moralist. Having established this, Dr. Pollard ingeniously shows, from the dates of publication, that whenever Norden was achieving success with his surveys there was a lull in the production of the religious works, which however came forth again whenever a cessation of his activity in the other field rendered his financial position less favourable.

The Tenth Italian Geographical Congress.

A general meeting of Italian geographers takes place every three years, and the tenth occurrence will be in the autumn of the present year, at Milan, from September 6 to 15. The programme of the meeting, a copy of which has been received at the Society, shows that especial attention will be given to economic problems now facing Italy as well as to the diffusion of culture and geographical knowledge. The organization follows the usual lines of such assemblies. The proceedings at Milan (September 6 to 10) will include both general and sectional meetings for the delivery of addresses and the reading of papers, while five exhibitions will be arranged for the same period, illustrating the expansion, scenery, and geographical output of Italy, as well as early cartography in general. Excursions will take place afterwards—to the Italian Lakes, the Upper Ossola valley, and the plain of Lombardy. Foreigners as well as

Italians are accepted as members of the Congress, the subscription being fixed at 40 lire for private persons and for learned institutions, and 100 lire for public bodies and societies of an economic character. The President is General Carlo Porro, and the office of the Organizing Committee is at the house of the Touring Club Italiano, 10 Corso Italia, Milan (105), to which inquiries may be addressed.

CORRESPONDENCE

Ancient Surveying Instruments

IN a paper on "Ancient Surveying Instruments" which I recently read before the Royal Geographical Society (see *Geogr. Journ.*, February 1927) I inadvertently omitted to say that the "groma" which was found in the Fayum, was first recognized at the rooms of the Egyptian Exploration Society by Mr. R. W. Sloley, who figured it and published an account of it in 'Ancient Egypt,' September 1926. This, together with the information contributed by the President to the discussion on the paper, completes, I think, all that is known about this interesting instrument.

H. G. LYONS.

MEETINGS: ROYAL GEOGRAPHICAL SOCIETY: SESSION 1926–1927

Tenth Evening Meeting: 21 March 1927.—The President in the Chair.

ELECTIONS.—Edmund Chaplin Baldwin, O.B.E., F.C.A., F.C.I.S., F.F.I., Bentley Beetham; Percy George Frederick Clarke, M.A.; Charles Thorpe England; Alfred Reinhold Tanner Finch, B.A.; Henry William Hall; Capt. Frederick Henry Miller; Chadwick H. Moore; Lieut. R. D. Neville, R.A.; George Normanton; Capt. Vivian Gerald Olive; Frederick Charles Penney; Emile Victor Rieu; John Charles Edward Rogers; J. A. E. Sanders-Bates, F.R.A.I.; Kumud Bandhu Sengupta, B.A., B.T.; Mrs. M. Sherlock; Frederick Burgess Smith; R. G. Ranyard West, M.B., B.S., M.R.C.P., D.P.H.; William Croucher West; T. A. Williams; David Wynter.

PAPER: The Cambridge Expedition to East Greenland. Mr. J. M. Wordie.

Sixth Afternoon Meeting: 28 March 1927.—Sir Charles Close, K.B.E. (Vice-President), in the Chair.

PAPER: A graphical method of discussing the Figure of the Earth. Mr. A. R. Hinks.

Eleventh Evening Meeting: 4 April 1927.—The President in the Chair.

ELECTIONS: Newton Bell; Capt. Alfred Boyes; Ellis Lee Entwistle; Bernard Greaves; George Alexander Greville Haslam, B.S., M.A.; Ernest Housden Langley; E. S. Lindley, B.A., M.I.C.E.; Alan Moysey-Adams; Major M. A. Nicholson, M.B., I.M.S.; William George Phillips, B.A.; The Hon. Charles Rhys, M.P., M.C.; Sir John C. E. Shelley-Rolls, Bart.; Capt. Claud Slaughter, R.A.M.C.; Mrs. Dora Gertrude Tapply; Lt.-Col. Louis Tebbutt, D.L., T.D., J.P.; Denton Thompson; William Gosseling Trower; Hadwen Harry Williams.

PAPER: Miss Gertrude Bell's Journey to Hayil. Dr. D. G. Hogarth (President).

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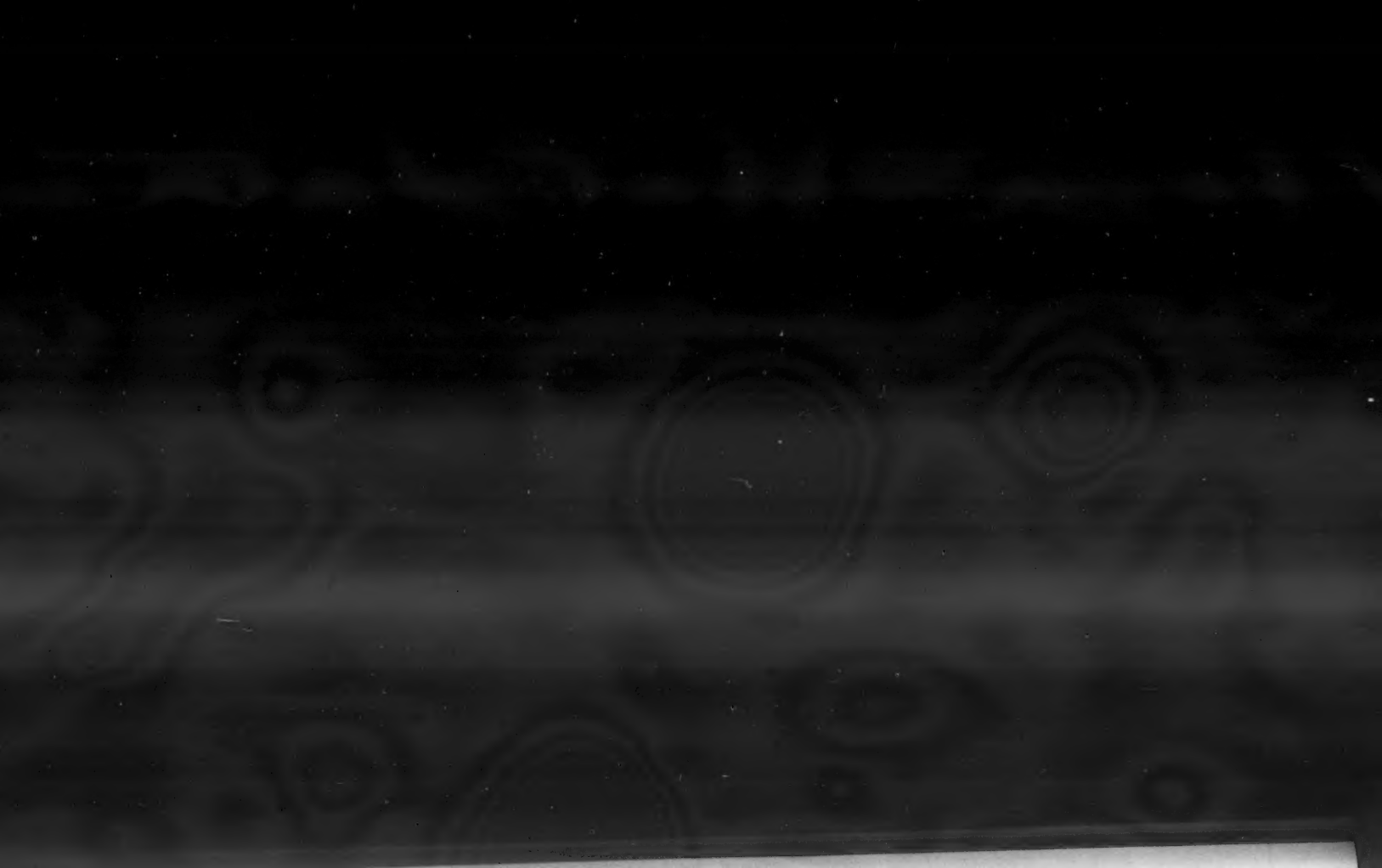
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